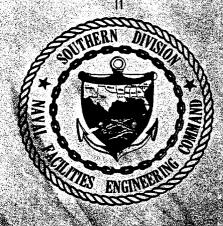


FINAL REPORT

REMEDIAL INVESTIGATION - PHASE INFORMATION - P

NAVALAIR STATION - KEY WEST KEY WEST, FLORIDA CONTRACT NO. N62467-88-C-0196 MAY, 1991



Prepared by: IT CORPORATION 8600 HIDDEN RIVER PARKWAY, SUITE 100 TAMPA, FLORIDA 33637

RELEASE OF THIS DOCUMENT REQUIRES PRIOR NOTIFICATION OF THE COMMANDING OFFICER OF NAS - KEY WEST

REMEDIAL INVESTIGATION/PHASE I REPORT FOR SITES 1, 3, 4, 5, 7, 8, 9, AND 10 NAVAL AIR STATION - KEY WEST KEY WEST, FLORIDA

APPENDIX E - VISUAL CLASSIFICATION OF SOILS AND WELL INSTALLATION REPORT

PREPARED FOR

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SOUTH CAROLINA
CONTRACT NUMBER N62467-88-C-0196

PREPARED BY

IT CORPORATION 8600 HIDDEN RIVER PARKWAY SUITE 100 TAMPA, FLORIDA 33637

IT PROJECT NUMBER 595392 MAY 1991

Site 1 Truman Annex Refuse Disposal Area

Well Construction D Truman Annex Refuse Disposal A Site 1 NAS Key West Key West, Floric

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE SURFACE	TOTAL WELL DEPTH (ft)	LENGIH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	\$LOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
MW 1-1	 06/06/90	11.57	 8.57	15.5	12.5	5.57 TO -6.93	0.010	16.0	0.5	1.5
 MW 1-2	 06/06/90	9.31	6.31	15.5	12.5	3.31 то -9.19	0.010	16.0	0.5	1.5
 MW 1-3 	 06/06/90 	10.61	7.61	14.0	 10.0 	3.61 to -6.39	0.010	12.5	0.5	1.5

Ebodies

When the control of the con

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PROJECT NUMBER: 595392					PROJECT NAME: KC	West.	Ren	edic	150	westion-	131-0140	
		BER: MY		-/	COORDINATES: N/A DATE: (a / 7/ 90						71	
ELEVA	TION:	11,57	- - TT		GWL: Depth 7./ Date/Time 6/6/30-1115				DA	DATE STARTED: 6/6/90 DATE COMPLETED: 6/6/90		
				Dorsey	Depth NA	Date/Time	* N/	<u> </u>				
DRILL	ING ME	HODS:	40//	ow Stem Au	Sery Sovie	Jucon			PA	GE /	OF' Ź	
DЕРТН (-∱-)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (b'')	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	re Time	MARKS Steamt Valpot (opni)	
 - 2-	N/A		Y.A	Fill dirt				2/-	NA		- С р _{рп} ov4 -	
- - - -				Fill dirt Light No au	brown							
 	····			Fill dirt Light	wrown						_	
 		>50		-0 10', -	Juper and it some st ing auger	neet		•			_	
 10-					nger acw						-	
 		9 9 9 9		Limesta w/shell tan	e fill I fragmen	27.		·			-	
- - - - - -		00 9 009		in an	ell fragme							
14-15		193	V	Limeston	fragmen	+ S		1	;/		0.2	
Drilling Contractor Drilling Ford 17-700 Mcbile Dr. 11 Drilling Equipment Ford 17-700 Mcbile Dr. 11 And and ancient of hydrate												

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY, HARD	MORE THAN 4.0

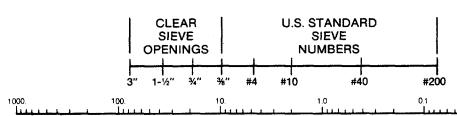
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽⁷⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAV	EL.		SAND		SILT AND CLAY			
	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CENT			

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES			
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES			
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES			
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES			
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES			
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES			
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES			
(APPRECIABLE AMOUNT OF FINES)	SC	CLAYEY SANDS, SAND—CLAY MIXTURES			

FINE-GRAINED/HIGHLY ORGANIC SOILS

0.01

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



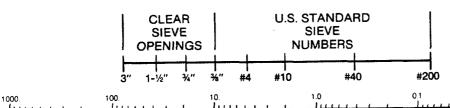
PROJE	ECT NUM	/BER: _	95	392	PROJECT NAME: Keallest Remarkage Truestion C. "/								
BORING NUMBER: MW 1-1			COORDINATES: 1/2 DATE: 6/6/90						0				
					GWL: Depth 7 Date/Time 6/6/90 -					DATE STARTED: 6/6/90			
ENGINEER/GEOLOGIST: K. Dorsey					Depth N/A Date/Time				DA	DATE COMPLETED: (0 /0 /9)			
DRILL	ING MET	HODS:	401	ow Stem A	Juger Soli	t 5000	77)		PA	GE 🤶	OF		
						7			7				
ОЕРТН (-)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	ren Time	MARKS Organic Valpor (opm)		
15-16_	*/,5		*/A	oolitic no fiil	Limestone	white	M/AC	4.4			_		
 18_		12 14 14 17		Oolitic white,	Limestone no fill		:		:		0,0 ppm - OVA -		
 18-20	KU-1 FOX	10298	-V	Oolitic white,	Limeston	e	V	V		11:45	-		
NOTE	n Contrac	tor D	rill	ina Solu	F BORING				-010				
Drilling	Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 Mobile Drill Driller: Kevin + Alex To hydrate												

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(°) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



GRAIN SIZE IN MM

0.01

0.001

0.0001

COBBLES	GRAV	'EL		SAND		SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GΜ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



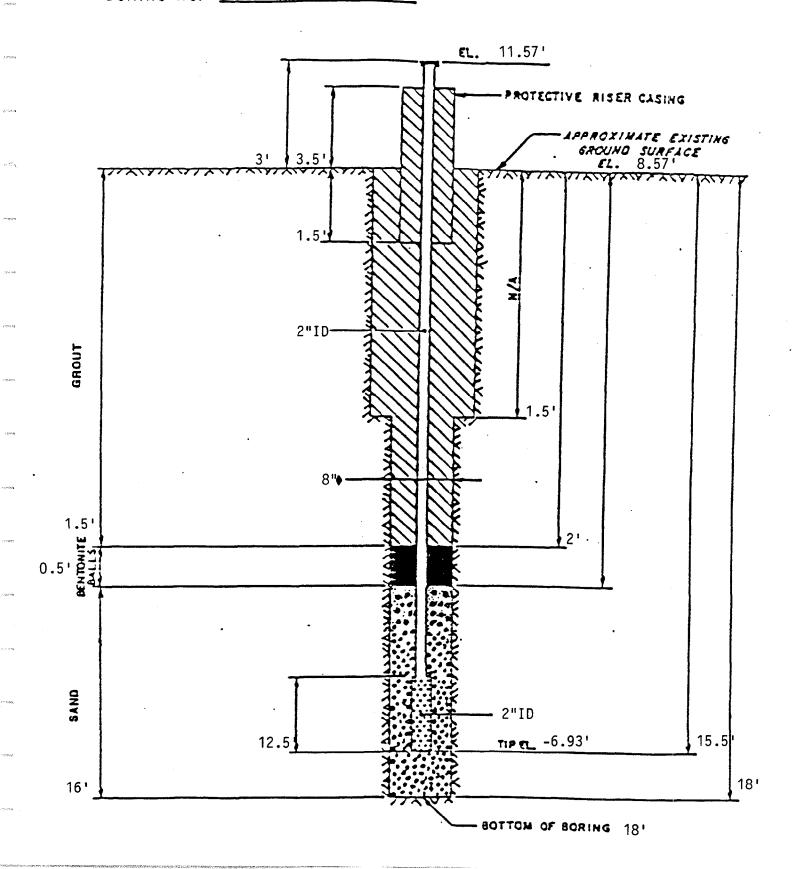
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedi	al Investigation	FIELD ENG./GEO. CHECKED BY N	K. Dorsey 1. Hampton	DATE 6/8/90 DATE 9/20/90						
BORING NO. MW1-1		DATE OF INSTALL								
BOREHOLE DRILLING										
DRILLING METHOD Hollow s	tem auger	TYPE OF BIT Rock bit								
DRILLING FLUID (S) USED:		CASING SIZE (S) USED: N/A								
FLUID FROM		SIZE	SIZEFROMT							
FLUIDFROM			FROM							
DESCRIPTION			•							
TYPE Sch. 40 PVC ASTM F48	0 and D170	RISER PIPE MAT	ERIAL Sch. 40	PVC ASTM F480						
DIAMETER OF PERFORATED SE	CTION 2"	RISER PIPE DIA	METERS:	and D170						
PERFORATION TYPE:			<u>N/A</u> 1.							
SLOTS HOLES	SCREEN X	LENGTH OF PIPE		i i						
AVERAGE SIZE OF PERFORATI		JOINING METHO	Flush threade	d with "O"						
TOTAL PERFORATED AREA	12.5'	rings to seal joints.								
PROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D.		OTHER PROTECTION Locking riser cap. Concrete pad 2'X2'X6" meets ASTM C150								
PROTECTIVE F.FE O.D.										
ITEM		RFACE (Ft.)								
TOP OF RISER PIPE	. 3	.0	57							
GROUND SURFACE	0	.0	57							
BOTTOM OF PROTECTIVE PIPE	1	.5	7.	07						
BOREHOLE FILL MATERIALS:										
GROUT Type I Cement	TOP 0.0	BOTTOM 1.5	TOP 8.57	BOTTOM 7.07						
BENTONITE 3/8" Pellets	TOP 1.5	BOTTOM 2.0	TOP 7.07	BOTTOM 6.57						
SAND 20/30 Silica, ASTM C775	TOP 2.0	BOTTOM 18.0	TOP 6.57							
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A						
PERFORATED SECTION	TOP 3.0	BOTTOM 15.0	TOP 5.57	BOTTOM -6.93						
PIEZOMETER TIP BOTTOM OF BOREHOLE										
GWL AFTER INSTALLATION	18.0		-9.							
WAS THE PIEZOMETER FLUSHED A WAS A SENSITIVITY TEST PERFOR REMARKS Bentonite hydrated for pad installed. Well developed	RMED ON THE PIE or ½ hour or more 6/6/90 approxima 25 gallons pumpe	TION? ZOMETER? before addition tely 15 min. by d. Measuring ta	YES Not not grout. 2'X centrifugal puripe deconed bef	OX OX 2'X6" thick concre						
sand free water, approximately 25 gallons pumped. Measuring tape deconed before and after use.										



MONITOR WELL INSTALLATION SKETCH

Rey West Remedial
PROJECT NAME Investigation INSTALLED BY K.Dorsey DATE 6/6/90
PROJECT NO. 595392 CHECKED BY M.Hampton DATE 9/20/90
BORING NO. MW1-1





PROJE	CT NU	MBER: 5	953	391	PROJECT NAME:	Kei 1 10 -	s + k	م د	امرام	***	1.40+ +1	Sing
		BER: YY			COORDINATES:	1/X	<u> </u>	<u>C C / 1 /</u>	<u> Caru</u> r	TDA	TE: 6/6/90	5/76
	TION:				GWL: Depth	Date	/Time	10/01	20-15.2		TE STARTED:	16/90
ENGIN	EER/GE	OLOGIS	т: <i>К</i> ,	Dorsey	Depth N/	Д Date	/Time	N/	, L	DA	TE COMPLETED	0: 6/6/90
DRILL	NG ME	THODS:	Holl	ow Stem A	uger/ 501.		201			PA		OF 2
DЕРТН (∱∱,)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ('6")	RECOVERY ()		DESCRIPTION			USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REM Tinje	ARKS Organic Sucr
ં ન	NA	9 10 11 14	×/A	Fill gra Dry, +	vel to sa	nd siz	e	14/4	NA	N/A		0.0 ppm _
 	Grain Grain	14 12 10 14 10 14		Fill gra Dry,	vel to sa	nd Si.	<i>z</i> e					010ppn _ 3VA _
 4-6_		2 8 8 14		Fill gras	vel to sav	nd siz	ود	•	:	the state of the s		0.0ppm - 31A -
6-8		5009		Auger re	pty out a jected or ward 3'		°					CIC ppin - OVA 3 Borenge
8-10	mwa Tiv) - 32		Fill grav	vel to sa	nd siz	د	:			15:00	- - -
10-12	:	2 22 7		Fill dir.	t, fine gro	rined		:				:
12-14		10 22 4	·		ne, gray + +014,5'	,				,		-
	·	12 12	\vee	Colitic !	ime = 10ne			V	· · · · · · · · · · · · · · · · · · ·	V		
Drilling	Contract	ent Fo	rd	5-700 Mot	f Boring		No-	TE	9000	alcd e	tonite ed and ydrate	Acues Con

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

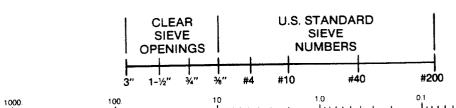
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	C - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

0.01

	THE GRANTED THE COLUMN								
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY							
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS							
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY							
	мн	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS							
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS							
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS							
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS							



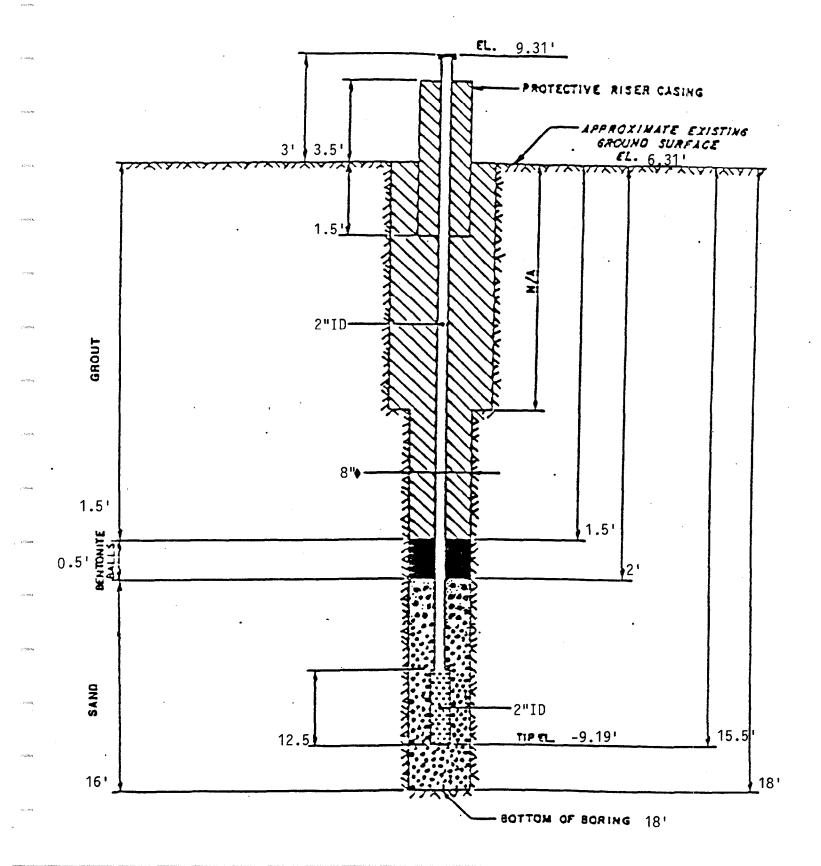
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedi	al Investigation	FIELD ENG./GEO. CHECKED BY <u>M.</u>	K. Dorsey	DATE 9/20/90					
PRCJECT NC. 595392 BORING NO. MW1-2		11.	Hampton	DATE 3720730					
		DATE OF INSTALL	ATION6/6/	′90					
BOREHOLE DRILLING									
BONEHOLE DIVIELING									
DRILLING METHOD Hollow s	tem auger	TYPE OF BIT	Rock bit						
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S)	USED: N/A						
FLUID FROM	то	SIZE	FROM	то					
FLUIDFROM		SIZE	FROM						
DESCRIPTION									
TYPE Sch. 40 PVC ASTM F48	0 and D170	RISER PIPE MATI	ERIAL Sch. 40 PV	IC ASTM EAGO					
DIAMETER OF PERFORATED SE		RISER PIPE DIAM	ETERS:	and D170					
PERFORATION TYPE:		1	<u>/A</u> 1. D.						
SLOTS HOLES	SCREEN X	i .	SECTIONS 6	i					
AVERAGE SIZE OF PERFORATION		į.							
TOTAL PERFORATED AREA		JOINING METHOD Flush threaded with "0"rings_to_seal_joints.							
798									
PROTECTION SYSTEM									
RISER PROTECTIVE PIPE LENG		i ·	ION Locking ri						
PROTECTIVE PIPE O.D3	3/41	Concrete pad 2	'X2'X6". meets A	ASTM C150					
59	DISTANCE AE	BOVE / BELOW	ELEV	ATION					
ITEM	GROUND SU	RFACE (Ft.)	NSL)						
TOP OF RISER PIPE		3.0	9.3						
GROUND SURFACE	0		6.3						
BOTTOM OF PROTECTIVE PIPE		1.5	4.8	31					
BOREHOLE FILL MATERIALS:									
GROUT Type I Cement	TOP 0.0	BOTTOM 1.5	TOP 6.31	BOTTOM 4.81					
BENTONITE 3/8" Pellets	TOP 1.5	BOTTOM 2.0	TOP 4.81	BOTTOM 4.31					
SAND 20/30 Silica, ASTM C775	TOP 2.0	BOTTOM 18.0	TOP 4.31						
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A					
PERFORATED SECTION	TOP 3.0	BOTTOM 15.5	TOP 3.31	1 BOT TOM - 9.19					
PIEZOMETER TIP									
BOTTOM OF BOREHOLE	18.0			1,69					
GWL AFTER INSTALLATION	6.9	9)_59					
WAS THE PIEZOMETER FLUSHED A	FTER INSTALLAT		YES NO						
WAS A SENSITIVITY TEST PERFOR	MED ON THE PIE	ZOMETER?	YES NO	المجادر الكار					
REMARKS Bentonite hydrated concrete pad installed. Well	davalanad 6/6/90	i for 30 minutes	by centrifugal b	jump until clear.					
sand free water, approximately	25 gallons pump	ed. Measuring t	ape deconed berc	ore and after use					
Dumn used was a 5 HP Briggs and Stratton with flow rate of 1 to 2 gpm.									



MONITOR WELL INSTALLATION SKETCH Key West Remedial

PROJECT NAME Investigation INSTALLED BY K.DorseyDATE 6/6/90
PROJECT NO. 595392 CHECKED BY M.Hampton DATE 9/20/90
BORING NO. MW1-2





PROJE	CT N	UMBER	: \$	45	39â	PROJECT NA	ME: م	1	~ F	<u> </u>	γ ε		, ,	. E 12+	, .		Ţ.,
BORIN	IG NL	MBER:	1 - 5		/-3	COORDINATI		-					TE:	61	6/90)	\neg
ELEVA	TION	:	10	وا ر		GWL: Depth	7'	Date/Time	6/6/	90-1	6:40	DA	TE STAF	TED:	100	190	
ENGIN	IEER/	GEOLO	GIST	: <	Dorsey	Depth	N/A	Date/Time		1/4			TE COM			190	\neg
DRILL	ING N	ETHOD	s: /	أباشتا أ	low Oten A	uger/S	PITT	Doon				PA	GE	1	OF	7	
			T				, , , , , , , , , , , , , , , , , , , ,			П		7					=
DEPTH (イン、)	SAMPLE	o o		RECOVERY ()		DESCRIPTION			USCS SYMBOL	MEASURED	(TSF)	WELL CONSTRUCTION	Tim	REM/	Org	gan I (Lors (1	2 (2)
	2	8			1' Top so				77 94	N/3	A	- \$5			c	- نــــــــــــــــــــــــــــــــــــ	
0-3		/2 /5			l'Limes	stone f	ill, fai	unclay	<u> </u>				16:	30	C' - 0/-	/ y ≮	-
<u> </u>		11 14 15			2'Limest	one fi	il crown r	· or /									4
4-6		5	- 1		2' Limesto	ne fi	il										1
6-8	1	18			wood (ref	•	gered.	SOWY								of all the community	
8-10	EP EP	3 7			2, 141100 5, 141100	2	1€gra	in					170	00	03%	bis bis	
⊙-/a_	14		7		Fine grain Little \$		i+1°C €	sand									
12-14		16 16	2		12-13 Oolit 13-14 Oolit				\								-
	1				Ena of	20.00	Λij			1	1						
Drilling Drilling Driller:	NOTES: Drilling Contractor Drilling Solutions Drilling Equipment Ford F900 Mobile Drill Driller: Kevin and Alex Note: Bentonite pellets award and allowed to myarate																

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

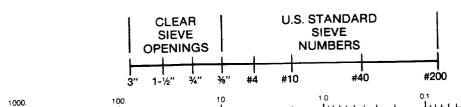
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	C - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(") STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001 -

0.0001



GRAIN SIZE IN MM

-	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

OUNTION OF THE PROPERTY OF THE					
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES. LITTLE OR NO FINES			
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES			
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES			
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES			
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES			
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES			
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES			
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES			

FINE-GRAINED/HIGHLY ORGANIC SOILS

0.01

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



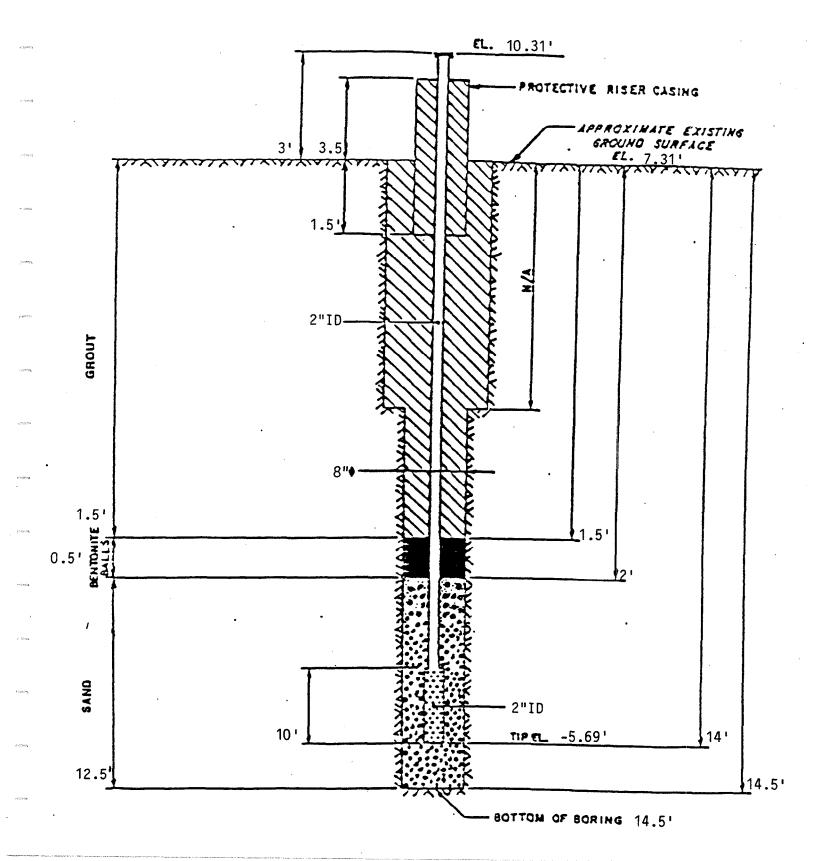
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedia	al Investigation	FIELD ENG./GEO.	K. Dorsey						
PRCJECT NO. 595392		CHECKED BYM.	Hampton	DATE 9/20/90					
BORING NO. MW1-3		DATE OF INSTALLA	ATION 6/6	5/90					
BOREHOLE DRILLING									
DRILLING METHOD Hollow	stem auger	TYPE OF BIT RO	ock bit						
DRILLING FLUID (S) USED:		1	USED: N/A						
FLUIDFROM	то	SIZE	FROM	TO I					
FLUIDFROM		SIZE	FROM						
DESCRIPTION									
TYPE Sch. 40 PVC ASTM F4	90 and D170	RISER PIPE MATE	ERIAL Sch. 40 I	OVC ACTH FACO					
DIAMETER OF PERFORATED SE			ETERS:						
PERFORATION TYPE:	ECTION		1/A1. D.						
SLOTS HOLES	SCREEN V	i i	SECTIONS						
(C.70)		1	Flush threaded						
AVERAGE SIZE OF PERFORATION TOTAL PERFORATED AREA		rings_to_sea		WICH					
TOTAL PERFORATED AREA			JOINGS.						
PROTECTION SYSTEM		,							
RISER PROTECTIVE PIPE LENG	3TH5'	OTHER PROTECT	ON Locking rise	r cap,					
PROTECTIVE PIPE O.D.	3 3/4'	Concrete pad 2'X2'X6" meets ASTM C150							
ITEM	DISTANCE AE GROUND SU								
TOP OF RISER PIPE	3	.0 10.61							
GROUND SURFACE	0	7.61							
BOTTOM OF PROTECTIVE PIPE	1	.5	6.1	1					
BOREHOLE FILL MATERIALS:									
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1.5	TOP 7.31	BOTTOM 5.81					
BENTONITE 3/8" Perfets	TOP 1.5	BOTTOM 2.0	TOP 5.81	ВОТТОМ 5.31					
SAND 20/30 Silica, ASTM C775	TOP 2.0	BOTTOM 14.5	TOP 5.31	BOTTOM -7.19					
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A					
PERFORATED SECTION	TOP 4.0	воттом 14.0	TOP 3.31	BOTTOM -6.69					
PIEZOMETER TIP									
BOTTOM OF BOREHOLE	14.5		T	.19					
GWL AFTER INSTALLATION 7.0 0.31									
WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO X									
VAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? REMARKS Bentonite hydrated half hour or more before addition of grout; 2'X2'X6" thick									
concrete nad installed We	concrete pad installed. Well developed 6/7/90 for approximately 30 minutes by centrifugal								
pump, approximately 20 gall	ons pumped; wate	r turned from si	It grey to clear	and silt free.					
Measuring tape deconed before and after use. Pump, 5 HP Briggs and Stratton, flow 1 to									



MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BY K. Dorsey DATE 6/6/90
PROJECT NO. 595392 CHECKED BY M.Hampton DATE 9/20/90
BORING NO. MW1-3



Site 3 Truman Annex DDT Mixing Area

Well Construction Details
Truman Annex
DDT Mixing Area
Site 3
NAS Key West
Key West, Florida

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE ELEVATION (ft)MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	 SLOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
MW 3-1	06/02/90	8.49	5.49	10.0	 5		0.010	 7.0	1.0	2.0
MW 3-2	06/02/90	8.23	5.23	10.0	5	0.23 TO -4.77	0.010	7.0	1.0	2.0
MW 3-3 	06/02/90	9.09	5.76 5.76	9.6	 5 	1 1.09 то -3.91	0.010	! 7.0 	1.0	2.0



PROJE	CT NUM	غ :BER	95	392	PROJECT NAME:	ley West i	Ren	redia! -	Inc	<u>restigatio</u>	<u>// -Sitき3</u>	
BORING NUMBER: MW 3-1 ELEVATION: 8,49					COORDINATES: N/4 GWL: Depth 4.5' Date/Time loid 90-9:35					DATE: 6/2/20 DATE STARTED: 6/2/20		
		8,49	1			Data (Time			DA	TE COMPLETE	V / 5	1
			<u>ني ۱:</u>	Callagari	Depth Are				PA		OF 3	1
DRILL	NG MET	HODS:	$C_{\mathcal{V}}$	COUNT	70 C3 C 76	THY AUGE		7	1] 1
DEРТН (ҰҰ)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (b'')	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	ren Time	NARKS Organie Vapor(opi	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
0-2	Plot 4	N/A	2	Limest w/rock			27 K/2 - 1	NIA	NA	9:30	- - - -	
2-4 4-6 5-8	<i>Ng∯</i>	7	. ;	Limes.	cement stone fill	ty nents ty governts		——		4:50	Ippm -	
NOTI Drillir	ES:	nent Fo	ord :	11 11 JOINT F-700 TI EE	Fiens onle Denli	NOTE:	12	upt		e perione and the beaus		
						Commi	אומג שיי	" cor	nd i	tions.	5 Under	

	The state of the s
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

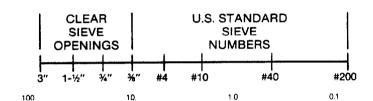
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	OILI AND ODA

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GW GRAVEL-SAND M LITTLE OR NO GP POORLY-GRADED GRAVEL-SAND M LITTLE OR NO GM SILTY GRAVE GRAVEL-SAND-SILT GC CLAYEY GRAVE GRAVEL-SAND-CLAY WELL-GRADED GRAVELLY SA LITTLE OR NO SP POORLY-GRADED GRAVELLY SA LITTLE OR NO SM SILTY SANI SAND-SILT MIX	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

0.01

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS	
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY. ORGANIC SILTS	
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT	



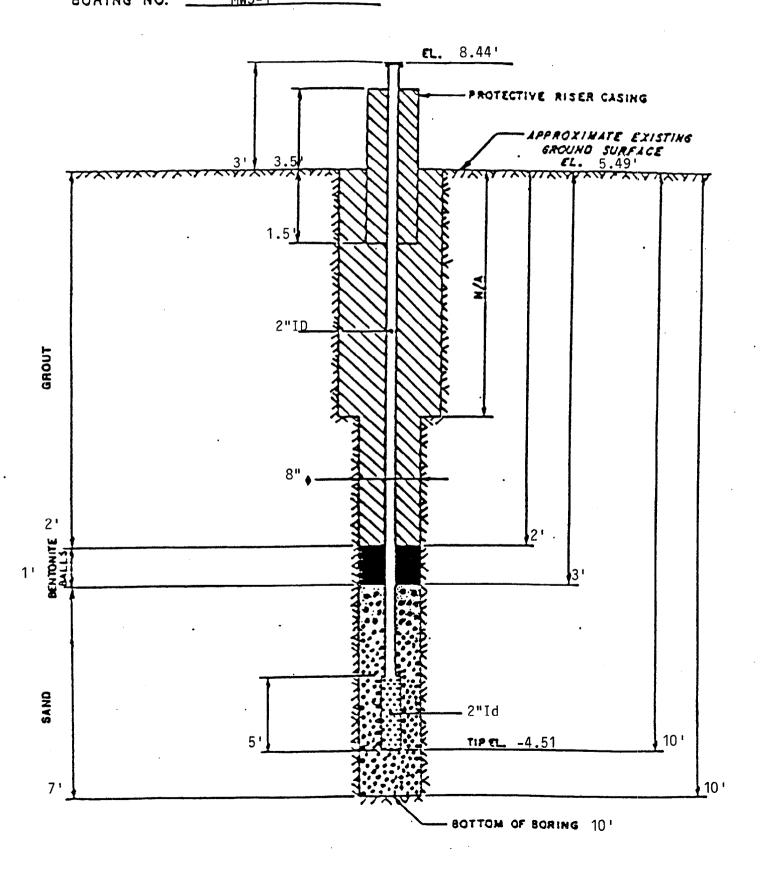
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedi	al Investigation	FIELD ENG./GEO	C.Callegari	DATE 6/2/90			
PRCJECT NC. 595392		CHECKED BY G.S.	tephens	DATE 9/20/90			
BORING NO. MW3-1			•				
		DATE OF INSTALL	ATION 6/2	7/90			
BOREHOLE DRILLING							
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT_	Rock Bit				
DRILLING FLUID (S) USED:			USED: N/A				
FLUID FROM	то	E	FROM				
FLUIDFROM		SIZE		то			
DESCRIPTION			•				
TYPE Sch. 40 PVC ASTM	F480 and D170	RISER PIPE MAT	FRIAL Sch A	O PVC ASTM F480			
DIAMETER OF PERFORATED S				and D170			
DEDECOATION TYPE:			<u>N/ A </u>				
SLOTS HOLES	SCREEN [V]	LENGTH OF PIPE	•				
AVERAGE SIZE OF PERFORATI		JOINING METHOD					
TOTAL PERFORATED AREA		rings_to_sea	· ·				
TOTAL TENTOTIALES ANDA		sea	1 1011163 6				
PROTECTION SYSTEM							
RISER PROTECTIVE PIPE LEN	GTH 5'	OTHER PROTECT	ION Locking ris	er can			
PROTECTIVE PIPE O.D.		OTHER PROTECTION Locking riser cap, Concrete pad 2'X2'X6" meets ASTM C150					
ITEM		OVE/BELOW RFACE (Ft.)					
TOP OF RISER PIPE	3	.0	8.49				
GROUND SURFACE	О.	0	5.49				
BOTTOM OF PROTECTIVE PIPE	1	.5	·	3.99			
BOREHOLE FILL MATERIALS:		•					
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 2:0	TOP 5.49	BOTTOM 3.49			
BENTONITE 3/8" Pellets	TOP 2.0	BOTTOM 3.0	TOP 3.49	BOTTOM 2.49			
SAND 20/30 Silica, ASTM C775	TOP 3.0	BOTTOM 10.0	TOP 2.49	BOTTOM _4.51			
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 5.0	BOTTOM 10.0	TOP 0.49	BOTTOM -4.51			
PIEZOMETER TIP							
BOTTOM OF BOREHOLE	10.0			-4.51			
GWL AFTER INSTALLATION	N/A			N/A			
S THE PIEZOMETER FLUSHED AFTER INSTALLATION? AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? Well was developed until free from silt using a centrifuge pump. Pumped approximately 20 gallons, changed from dark silty to clear silt free. Pump used to develop well was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.							



MONITOR WELL INSTALLATION SKETCH

Key West Remedial PROJECT NAME Investigation INSTALLED BY C.Callegar DATE 6/2/90 PROJECT NO. 595392 CHECKED BY G.Stephens DATE 9/20/90 BORING NO. MW3-1





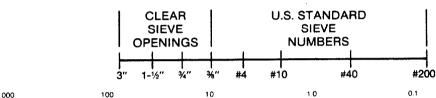
	ECT NUM				PROJECT NAME:	Ken west	Ren	nedia	IIn	Jestin 11.	C/1 - O / C 3
	IG NUM			3-2	COORDINATES:			·	DA	те: <u>6</u>	12/90
ELEVA		8,2	<u>3</u>	A silverial	GWL: Depth 5	Date/Tim		11:05		TE STARTED:	
DRUI	ING MET	HODS	<u>ローレー</u>	Callagari	Depth	Date/Tim		//µ	PA	TE COMPLETE	:D: <u>6 / 3 / ○)</u> OF
Divice	ING WE	11003.	(,)		· · · · ·		<u> 520</u>			JE	Or ,
рертн (ф	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	RE	MARKS
	Sports	NA	N/A	C-1 Moderate	ly serted	5p Sc - 1	27	N/A	MA		
۵.۲	Bost Post Post Melula Cos				da singpul James Je 4 i il		NA			11100	1 ppnc
2-4-				to Limesy	in white						1850
4-6- - - - - - -					1	ферг	Address of the state of the sta				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
\$-10 - - -				8-10'					· ·	11:35	Background and Ippm
NOTE				lina Solut		Noi-: A		onit	c		-
Drilling	g Equipm	ent <u>F</u>	<u> </u>	F: 700 md	Mile shot	Blow Cour hazardou practica protecti	nt is e	N/A b in vira	i Deca On m USC	ause of ar	find not

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



1000 100 10. 10 0.1 0.01 0.001 0.0001

GRAIN SIZE IN MM

	GRAV	/EL		SAND		SILT AND CLAY		
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE			

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



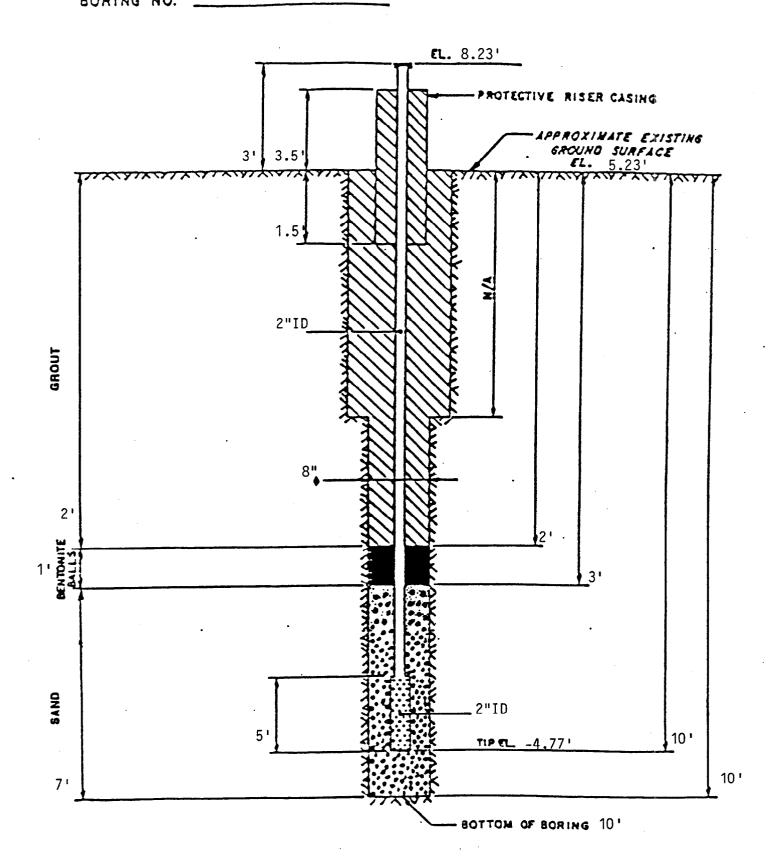
MONITOR WELL INSTALLATION SHEET

RCJECT NC. 595392 ORING NO. MW3-2		CHECKED BY G.	Stephens	DATE 9/20/90		
		DATE OF INSTAL	LATION6/2/9	0		
DREHOLE DRILLING				×		
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT	Rock Bit			
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S) USED: N/A			
FLUIDFROM	то	SIZE	FROM	то		
FLUIDFROM	то			то		
DESCRIPTION						
TYPE Sch. 40 PVC ASTM F4	80 and D170	RISER PIPE MAT	TERIAL Sch. 40	PVC ASTM F480		
DIAMETER OF PERFORATED S		RISER PIPE DIA		and D170		
PERFORATION TYPE:		O.D	<u>N/A</u> 1. D	. 2"		
SLOTS HOLES	SCREEN X	1	E SECTIONS			
AVERAGE SIZE OF PERFORATI	ons		D Flush threade			
TOTAL PERFORATED AREA	5 '	rings to seal joints.				
PROTECTIVE PIPE LENG		OTHER PROTECTION Locking riser cap, _Concrete pad 2'X2'X6" meets ASTM C150				
ITEM	DISTANCE AB GROUND SU	RFACE (Ft.)		VATION MSL)		
TOP OF RISER PIPE	3	3.0	8.23			
ROUND SURFACE		.0	5.23			
SOTTOM OF PROTECTIVE PIPE	1	.5		3.73		
BOREHOLE FILL MATERIALS:		·				
	TOP 0.0	BOTTOM 2.0	TOP 5.23	ВОТТОМ 3.23		
GROUT Type I Cement ASTM C150			TOP 3.23	BOTTOM 2.23		
GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets	TOP 2.0	BOTTOM 3.0		- I		
GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775	TOP 3.0	BOTTOM 10.0	TOP 2.23			
GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP 3.0 TOP N/A	BOTTOM 10.0 BOTTOM N/A	TOP 2.23	BOTTOM N/A		
GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A PERFORATED SECTION	TOP 3.0	BOTTOM 10.0	TOP 2.23	BOTTOM N/A		
GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A ERFORATED SECTION PIEZOMETER TIP	TOP 3.0 TOP N/A TOP 5.0	BOTTOM 10.0 BOTTOM N/A BOTTOM 10.0	TOP 2.23	BOTTOM N/A BOTTOM -4.77		
GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A PERFORATED SECTION PIEZOMETER TIP	TOP 3.0 TOP N/A TOP 5.0	BOTTOM 10.0 BOTTOM N/A	TOP 2.23	100===:		
GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775	TOP 3.0 TOP N/A TOP 5.0	BOTTOM 10.0 BOTTOM N/A BOTTOM 10.0	TOP 2.23	BOTTOM NA		



MONITOR WELL INSTALLATION SKETCH

ROJECT NAME Investigation INSTALLED BY C.Callegar DATE 6/2/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW3-2





PROJECT NUMBER: 59392	PROJECT NAME: Key West	Remedia	Lives11701.	1 Circ 3
BORING NUMBER: MW 3-3 ELEVATION: 9,09	GWL: Depth 5, / Date/Time	6/2/90-13:05	DATE: 6/	2/95
ENGINEER/GEOLOGIST: C. Callagari	Depth N/A Date/Time		DATE COMPLETE	
DRILLING METHODS: HOLLOW Sten	Luger /Sp/ Spo	7	PAGE ,	OF
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6") RECOVERY ()	DESCRIPTION	USCS	Time	MARKS Ongani 4 Vacan (Sun)
0-2	one fill + sand	MANA	13100	1996
Judicos on Limesto	water Die Stande to		Backer	
NOTES: Drilling Contractor Drilling Equipment For 3 F - 700 N Driller: Kevin +Ed	robile Drill. all	Naurol to	to added hydrate. WA become ya cor	Blow

DENSITY OF GRANULAR SOILS

CONSISTENCY	STREN	GTH (TON		UARE FO	т (тс		DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY SOFT		LESS	THAN 0.2	25			VERY LOOSE	0 - 4
SOFT		0.2	25 to 0.50				LOOSE	5 - 10
FIRM		0.	50 to 2.0				MEDIUM DENSE	11 - 30
HARD	1	2	040 4.0	\longrightarrow			DENSE	31 - 50
VERY HARD		MOR	E THAN 4	.0 /			VERY DENSE	OVER 50
CLEAR SIEVE OPENINGS NUMBERS 3" 1-1/2" 3/4" #4 #10 #40 GRAIN SIZE						#200 01	2-INCH O.D. SPLIT USING A 140-POUN THROUGH 30 INCH 18 INCHES AND TH RESORDED FOR E SJUMMATION OF TI	IS REQUIRED TO DRIVE A BARREL SAMPLER 12 INCHES ID HAMMER FALLING FREELY IES. THE SAMPLER IS DRIVEN IE NUMBER OF BLOWS ACH 6-INCH INTERVAL. THE HE FINAL TWO INTERVALS IS ENETRATION RESISTANCE.
COBBLES	GRA	VEL		SAND				SILT AND CLAY
CORRES	COARSE	FINE	COARSE	MEDIUM	FINE			

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS. GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

		,
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



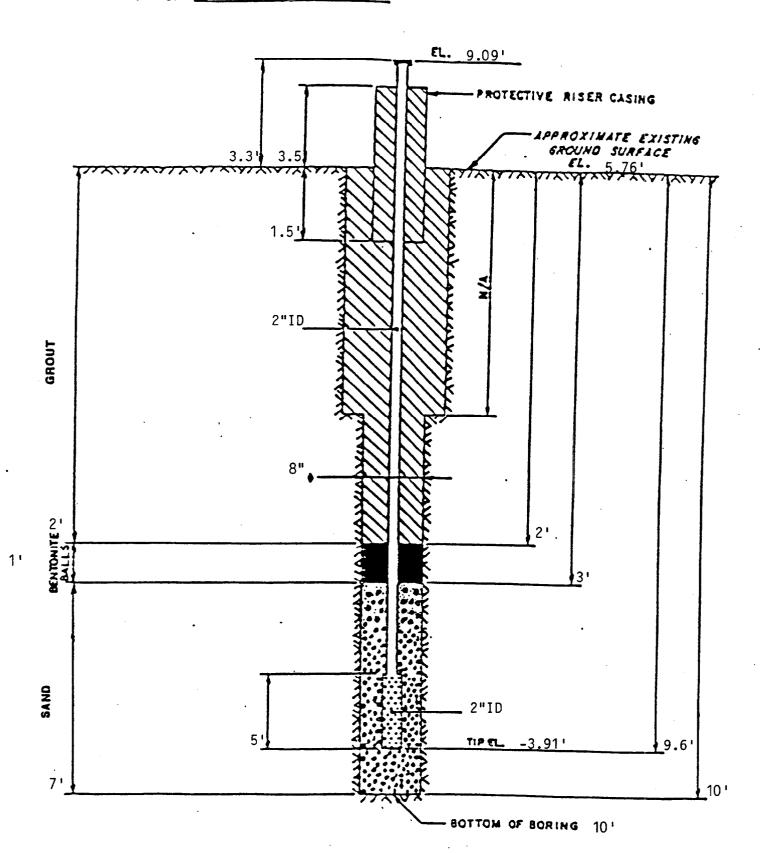
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedi	al Investigation	FIELD ENG./GEO.	C.Callegari	DATE 6/3/90			
PRCJECT NC. 595392 BORING NO. MW3-3		ONCORED BI M.	Hampton	_ DATE .9/20/90			
/*************************************		DATE OF INSTALL	ATION	5/2/90			
BOREHOLE DRILLING	•						
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT	Rock Bit				
DRILLING FLUID (S) USED:		CASING SIZE (S) USED: N/A					
FLUID FROM	то		FROM	Į.			
FLUIDFROM			FROM				
DESCRIPTION							
TYPE Sch. 40 PVC ASTM	E400 and D170	DISED DIDE MAT	EDIAL C.L. A	DUC ACTM FACO			
DIAMETER OF PERFORATED S		RISER PIPE MAT		and D170			
PERFORATION TYPE:	LC HON Z	1		0.11			
SLOTS HOLES	SCREEN [Y]	1	N/A 1. D				
		LENGTH OF PIPE					
AVERAGE SIZE OF PERFORATI		JOINING METHOD Flush Threaded with "0"					
TOTAL PERFORATED AREA		_rings to seal joints.					
PROTECTION SYSTEM			,				
RISER PROTECTIVE PIPE LEN	GTH <u>5'</u>	OTHER PROTECTION Locking riser cap,					
PROTECTIVE PIPE O.D3	3 3/4'	Concrete pad 2'X2'X6" meets ASTM C150					
1079							
ITEM	DISTANCE AE GROUND SU	RFACE (Ft.)	ELEVATION (MSL)				
TOP OF RISER PIPE	3	.3	9.09				
GROUND SURFACE	0.	0	5.76				
BOTTOM OF PROTECTIVE PIPE	1.6		4.59				
BOREHOLE FILL MATERIALS:							
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 2.0	TOP 5.76	BOTTOM 3.76			
BENTONITE 3/8" Pellets	TOP 2.0	BOTTOM 3.0	TOP 3.76	BOTTOM 2.76			
SAND 20/30 Silica, ASIM C775	TOP 3.0	BOTTOM 10.0	TOP 2.76	BOTTOM -4.24			
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 4.6	BOTTOM 9.6	TOP 1.09	BOTTOM -3.91			
PIEZOMETER TIP							
BOTTOM OF BOREHOLE	10.0	-4.24					
GWL AFTER INSTALLATION	N/A		N/A				
THE PIEZOMETER FLUSHED AFTER INSTALLATION? AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? Mell grouted and developed 6/5/90, water removed by centrifugal pump, approximately 15 gallons, changed from light silty grey to clear sand free. Pump was a 5 HP							
Briggs and Stratton with a	flow rate of 1	to 2 gpm.					



MONITOR WELL INSTALLATION SKETCH Key West Remedial

PROJECT NAME Investigation INSTALLED BYC.CallegariDATE 6/2/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW3-3



Site 4
Boca Chica Open Disposal Area

Well Construction Details Boca Chica Open Disposal Area Site 4 NAS Key West Key West, Florida

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE ELEVATION (ft)MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	SLOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
MW 4-1	06/02/90	4.79	1.79	15	12.5	-0.71 TO -13.21	0.010	19.0	0.5	0.5
MW 4-2	06/02/90	5.08	2.08	13	10.0	-0.92 TO -10.92	0.010	18.0	0.5	1.5
MW 4-3	06/04/90	4.91	1.91	16	15.0	0.91 TO -14.09	0.010	} 19.0	0.5	0.5
MW 4-4	06/04/90	4.91	 1.91	17	15.0	-0.09 TO -15.09	0.010	19.0	0.5	0.5
 MW 4-5R 	 06/23/90 	5.35	 2.35 	17 17	15.0	0.35 TO -14.65	0.010	 19.0 	 0.5 	 0.5

Franks



PROJE	CT NUN	1BER: 5	<u>953</u>	392	PROJECT NAME: Key West Remedial Injectigation Six 24								
BORIN	G NUME	BER: M	W 4	-1	COORDINATES: N/A					DA.	DATE: 6/2/90		
ELEVA.	TION:	4.79			GWL: Depth /	GWL: Depth / Date/Time 6/2/90-09:30					DATE STARTED: 6/2/90		
ENGIN	EER/GE	OLOGIS	T: J, (Buerhoo	Depth N/A Date/Time N/A					DA.	DATE COMPLETED: 6/2/90		
							වී වචර7	1		PA		OF 2	
DRILLING METHODS: Hollow Stem Auger/Spilt Spoon PAGE / OF 2													
рертн (Ѭ∙)		BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION			USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	re Time	MARKS Organic Vaporiopou	
	MA	1	NA	Silty Lim	estone w	inite	/ brown	NA	N/A	NA			
ි . එ-බ		 		Some mare Water 10	prove mate				:		09:30	lppn -	
	4-1: VOA BNA metal B-TOK	1 1 30	: :	Limestor White, c	•	lated	į	:			10:30	, USA, _	
	N/A	7 9 10 21		Limeston Consolida		e						leson -	
ا الا أطا	:	30 33 33 33		Liniestor Consalia	•	e .				•		lppm.	
7 - 10		12 09 13		Limeston	•	ح						Ιρρα: -	
10-12		14 17 12 10	:	Limestone Consolid	•				The second of th	,		lpan;	
		09 11 13	1	Limestone Consolida									
12-14		12								 		17Pm -	
NOTE	NOTES:												
Drilling Contractor Drilling Solutions Note: Bentonite pellets													
Drilling Equipment House Stem Auger under under under													
	Driller: Nick (Ateck Assoc., Inc.)												
Driller	Driller: 141CA CATECA - SOUL, LINC.							to ayarate					

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

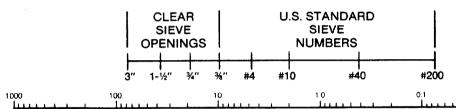
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(1)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAVEL		SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SIEI AIND GEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES		
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES		
GRAVELS WITH F!NES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES		
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES		
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES		
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES		

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	SLIGHT PLASTICITY INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



DBO IS	CT NUM	ARED: 4	-05	301	PROJECT NAME: K.e.	1,100+ 21	2 600 2	dial	- 17	Cd	and the second	
PROJECT NUMBER: 595392 BORING NUMBER: MW 4-1					PROJECT NAME: Key West Remediciti			DA	DATE: 6/2/90			
	TION:		W 4		<u> </u>	GWL: Depth / Date/Time 6/2/90 - 09/30						
ENGINEER/GEOLOGIST: J. BUET 1.00					Depth N/A	Date/Time					TED: 6/2/90	
				low Stem Au	ger/SplitS;	ocon	· · · · ·		PA	GE 2	OF 2	
DЕРТН (-{γ·)		BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION					Time	REMARKS DOCTORS Ligar (upo 1	
	NA	11	NA	Limester	ne, white		N/A	N/A	NA			
14-16_		19 20		Consul-	me, white						lown,	
		17 20 23		Conson	,					10:05	192m _	
16-18	<u>\\</u>	33	1	time to the same time.	and the second s		<u>. v</u>	- ✓	\V			
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† -								<u> </u>			-	
NOTE	g Contra	ctor	rili	ing Soluti	ಂ <i>ಗ</i> 2	NOTE:				.e .e		
Drillin	a Equipn	nent	Silou	u Stem A. ck Associ	<u>Jaer</u>			1ded 11/-		nd 200 te	oco eur	
Unite								/				

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

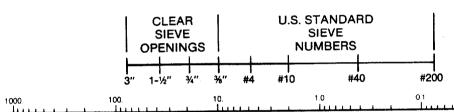
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAVEL		SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS. SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

1112 317.11227.1121					
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY			
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS			
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS			



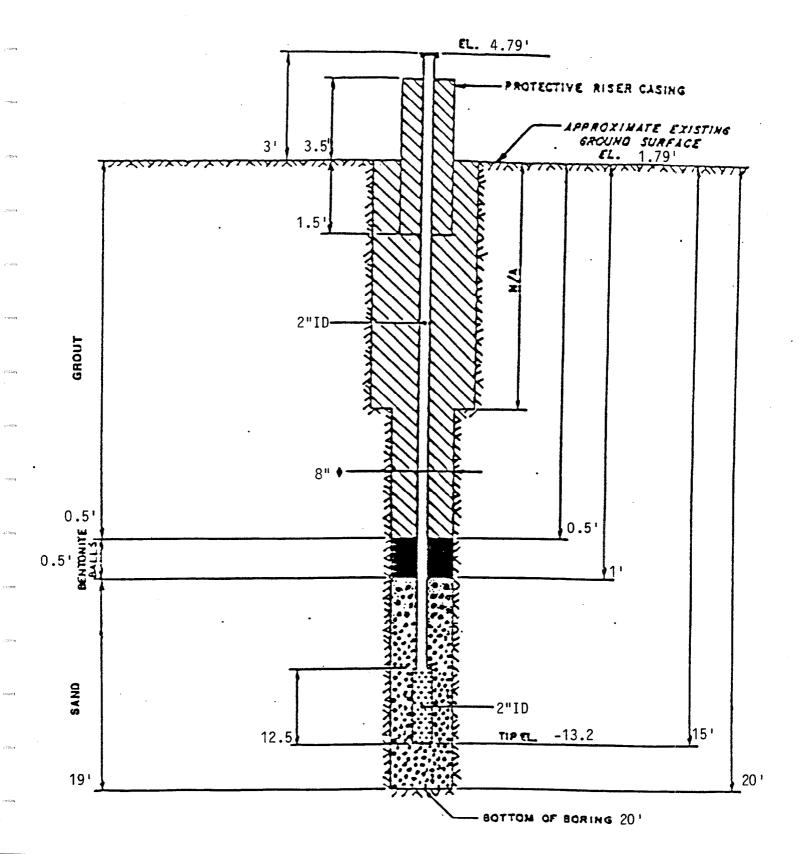
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedi	al Investigation	FIELD ENG./GEO.	J. Buerhop	DATE 6/2/90					
PRCJECT NO. 595392 30RING NO. MW4-1		CHECKED BY M	lampton	DATE 9/20/90					
30R1146 140. MW4-1		DATE OF INSTALLA	ATION6/	2/90					
30REHOLE DRILLING									
DRILLING METHOD Hollow S	tem auger	TYPE OF BIT	Rock bit						
DRILLING FLUID (S) USED:	N/A		USED: N/	Ą					
FLUID FROM	ТО	1	FROM	i					
FLUIDFROM		SIZE		_TO					
DESCRIPTION									
TYPE Sch. 40 PVC ASTM F	400 and D170	RISER PIPE MATE	ERIAL Sch. 40	DVC ASTU FACE					
DIAMETER OF PERFORATED SE			ETERS:						
PERFORATION TYPE:	211011	1	<u>L/A </u>	!					
SLOTS HOLES	SCREEN [V]	1	SECTIONS 5.	3					
AVERAGE SIZE OF PERFORATION		i e							
TOTAL PERFORATED AREA		JOINING METHOD <u>Flush threaded with "O"</u> <u>rings to seal joints.</u>							
TOTAL TEXT OF AT LESS ATTENTION									
PROTECTION SYSTEM									
RISER PROTECTIVE PIPE LENG	3TH 5'	OTHER PROTECTI	ON Locking rise	er can.					
PROTECTIVE PIPE O.D.		Concrete pad 2	-						
ITEM	DISTANCE AE GROUND SU	OVE/BELOW ELEVATION RFACE (Ft.) (MSL)							
TOP OF RISER PIPE	3	.0	4.	79					
GROUND SURFACE	0	0 1.79							
BOTTOM OF PROTECTIVE PIPE	1	.5 0.29							
BOREHOLE FILL MATERIALS:	·								
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 0.5	TOP 1.79	BOTTOM 1.29					
BENTONITE 3/8" Pellets	TOP 0.5	BOTTOM 1.0	TOP 1.29	BOTTOM 0.79					
SAND 20/30 Silica, ASIM C775	TOP 1.0	BOTTOM 20.0	TOP 0.79	BOTTOM -18.21					
GRAVELN/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A					
PERFORATED SECTION	TOP 2.5	BOTTOM 15.0	TOP - 0.71	BOTTOM-13.21					
PIEZOMETER TIP									
BOTTOM OF BOREHOLE	20.0		-18	3.21					
GWL AFTER INSTALLATION	2.8	3	_	1.04					
MAS THE PIEZOMETER FLUSHED A "AS A SENSITIVITY TEST PERFOR EMARKS Well was developed by centrifugal pump. Coup required 3 ft. height. Pump	MED ON THE PIE 6/2/90 producing line with extens	ZOMETER? clear sand/silt	o the PVC rise	X mped 10 gallons r to reach the					



MONITOR WELL INSTALLATION SKETCH Key West Remedial

PROJECT NAME Investigation INSTALLED BY J.Buerhop DATE 6/2/90
PROJECT NO. 595392 CHECKED BY G.Stephens DATE 9/20/90
BORING NO. MW4-1





PROJE	CT NUM	IBER: 5	95	392	PROJECT NAME: ~	tuwest	Rei	earail	-nve	stigation	- 5/TC S	
		BER: M			COORDINATES: N				DA	<u>v</u>	12/90	
ELEVA		<u>5,08</u>			GWL: Depth 2.9"	Date/Time				TE STARTED: '	6, 6, 90	\dashv
ENGIN	EER/GE	OLOGIS	T: J,	BuerhoD	Depth N/A	Date/Time	· N/	'pd_		TE COMPLETE		_
DRILLI	NG MET	HODS:	111 CH	ow stem to	ger/Split S	<u>0001</u>			PA	GE /	OF' 2	_
DEPTH (・た)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (0,51)	RECOVERY		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REI Time	MARKS Organie Vaporipar	as)
-05- -1.0- -2.0- -2.5-	7 (3	17 20 17 750 >50	1.5	White 4. Refosal	stone , ary longs idated (a) 20° auge +0 25	rea	4/2	3	N/A	14:20 14:30	lppm	1 1 1 1 1
	DA BNA metal ED tox N/A	\20 \			1.5 July 16 1.5 5.5 1	• (** &**		٠				
- n,5_			₩ A	Refusion Augeries	n 1 (2) 5 a 40 10.0						Ippm	
12,6		166 4 6	0.5	Limeste White, C	one onsolidated	k						
 	\/	6 6 8 10 12	1.5				,	\ \	\/			
NOTE Drilling	Contrac	ctor D	<u>rill</u>	ing Solus	tions_					pellets		
Drilling Driller:	Equipm	ent H	olle Hec	owsten i LK Associ,	tre.)			ied o Kydi		t unows e	ed .	
								•				

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY.HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

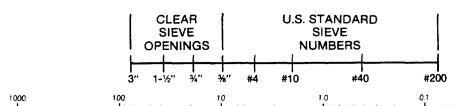
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DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

00000.50	GRAV	/EL		SAND	•	SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDILIM	FINE	SIEI AND CEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY. GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 59	5392	PROJECT NAME: $K\epsilon$	ywest	Rei.	33.01	I1.15	254 - 124	1	<u>ر</u> د
BORING NUMBER: MW		COORDINATES: N/				DAT	Έ: ζ	0/4/90	2
ELEVATION: 5,08		GWL: Depth タデ	Date/Time	0/0	- /4/2.0		E STARTED	<u> </u>	43
ENGINEER/GEOLOGIST:	1. Buer 1.00	Depth .v/,-k	Date/Time		/		E COMPLE		733
DRILLING METHODS: 40	1 cw Stem Au	ider /Split.	<u>5poon</u>			PAG	E 👟	OF' ç	2
DEPTH (\$\frac{\fir}{\frac{\fir}\firk}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\fra		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL	Time		en ik Ortuga
13.0 NA 10 9 1.0 1.5 1.3 1.0 0.5 1.5 8 1.5 8	Limest	Mightiet itee		N/A	2	0	Time		
NOTES: Drilling Contractor Drilling Equipment HOIL Driller: Nick And	lling Solve ow Stem A	vaer	lo7 E:						

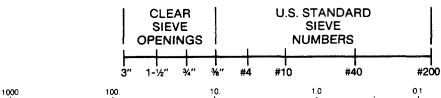
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

SILT AND CLAY



000. 100. 10. 1.0 0.1 0.001 0.0001 GRAIN SIZE IN MM

	GRAV	'EL		SAND	
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



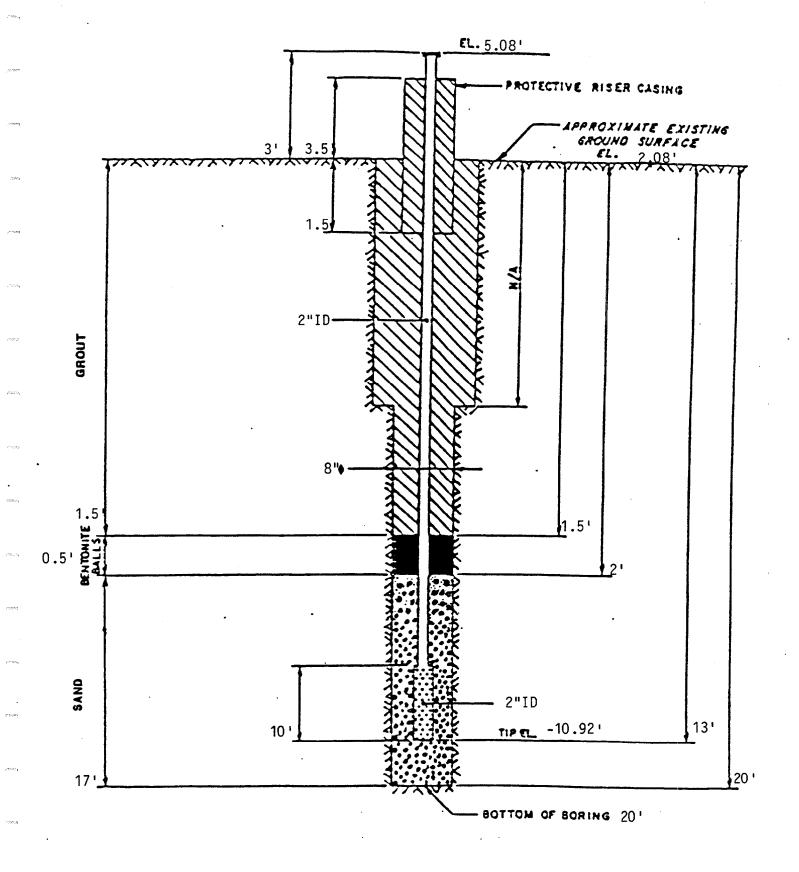
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remed	ial Investigatior	FIELD ENG./GEO.	J.Buerhop	DATE 6/2/90
BORING NO. MW4-2		ONCORED BI G.	Stephens	DATE <u>.9/20/90</u>
194-2		DATE OF INSTALL	ATION6/2/9	00
BOREHOLE DRILLING				
DRILLING METHOD Hollow	stem auger	TYPE OF BIT	Rock bit	
DRILLING FLUID (S) USED:			USED: N/F	1
FLUIDFROM	TO	SIZE	FROM	то
FLUIDFROM		SIZE	FROM	то
DESCRIPTION	I		•	
TYPE Sch. 40 PVC ASTM	F480 and D170	RISER PIPE MAT	ERIAL_Sch. 40	PVC ASTM F480
DIAMETER OF PERFORATED S		RISER PIPE DIAM		
PERFORATION TYPE:			<u> </u>	1
SLOTS HOLES	SCREEN X	LENGTH OF PIPE		
AVERAGE SIZE OF PERFORAT	TONS	JOINING METHOD		
TOTAL PERFORATED AREA	10 '	<u>rings</u> to sea		
RISER PROTECTIVE PIPE LEN PROTECTIVE P!PE O.D3		OTHER PROTECT _Concrete pad		
ITEM		BOVE/BELOW RFACE (Ft.)	ELE	VATION MSL)
TOP OF RISER PIPE	3	3.0		5.08
GROUND SURFACE	1	.0		2.08
BOTTOM OF PROTECTIVE PIPE	1	.5		0.58
BOREHOLE FILL MATERIALS:				
GROUT Type I Cement ASTM C150	TOP 0.0	воттом _{1.5}	TOP 2.08	воттом 0.58
BENTONITE 3/8" Pellets	TOP 1.5	BOTTOM 2.0	TOP 0.58	BOTTOM 0.08
SAND 20/30 Silica, ASTM C775	TOP 2.0	BOTTOM 20.0	TOP 0.08	BOTTOM -17.92
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A
PERFORATED SECTION	TOP 3.0	воттом 13.0	TOP -0.92	BOTTOM -10.92
PIEZOMETER TIP				
BOTTOM OF BOREHOLE	20.	.0		-17.92
GWL AFTER INSTALLATION	1.	.5		0.58.
AS THE PIEZOMETER FLUSHED A AS A SENSITIVITY TEST PERFORM MARKSWell_developed_6/	RMED ON THE PIE	ZOMETER?	YES NO YES NO YES after	Dumping 15
gallons by centrifugal pu order to reach the require	mp A counling	ı with extension	was added to	the PVC riser
a 1 to 2 qpm flow rate.	u s it. neight.	i unip useu was a	o in Diriggo and	COLUCION WICH



MONITOR WELL INSTALLATION SKETCH Key West Remedial

Rey West Remedial
PROJECT NAME Investigation INSTALLED BY J.Buerhop DATE 6/2/90
PROJECT NO. 595392 CHECKED BY G.Stephens DATE 9/20/90
BORING NO. MW4-2





PROJECT NUME	BER:	15	39 <u>2</u>	PROJECT NAI		<u> ۱۷ وی بر</u>	- 1	11.00.		<u> </u>	<u>, y 4 / 1/2 </u>
BORING NUMBE	ER: jay	. ں	:,	COORDINATE		٠			DA.		/4, 30
ELEVATION:	- 4	1			1.5%	Date/Time				TE STARTED:	6,4,95
ENGINEER/GEO				Depth		Date/Time		/1		TE COMPLETE	
DRILLING METH	IODS: 4	0//	ow Stem A	uger/S	P/17:	Spoon)		PAC	3E	OF 2
DEPTH (\(\frac{F}{2}, \) SAMPLE TYPE & NO.	SAMPLER PER ((a '') RECOVERY			DESCRIPTION			USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	re Time	MARKS Organie Vabores
7CL VOA 3a	\ \frac{\sigma}{\cdot \cdot \c	<i>/A</i>	too hard + Augered			,	NA	NA	2/2	14:00	1.0 ppm
4-6	88 15 19		Gravel Fill	10011+15	2 Lim	estone			- "		hoppm
TCL BNA 3 b	122 19 22 17		Gravel Fire	0011716	Lime	ston e			· ·	14:20	
TAL 8-10 metals	18 38 45 43		Oolitic	Lime Wet	stor) උ					1.0ppm
10-13	37 44 48		Oolitic Tan	Lim + Wet		ne				14:25	1.0ppn
12-14	18		Oolitic Tan	Lime:		ච					1.0ppm
 	20 12 16 18 17 20		Oolitic Tan-	Lime . Wet		e					LOPPM
NOTES: Drilling Contract Drilling Equipme	tor Dr	<u>`d</u>	ing Sclut F700 M.O	ino Dicor	12	NOTE	a	dde	da	te pe indall rate	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

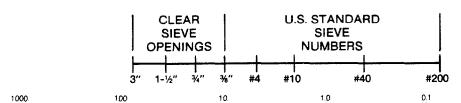
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0.0001

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LOOSE	5 - 10					
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0.001



GRAIN SIZE IN MM

FINE

COARSE

SAND SILT AND CLAY
MEDIUM FINE

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

GRAVEL

COARSE

COBBLES

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
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SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595 392	PROJECT NAME: Key Wes	+ Renied	ia: อีกระจะ	107131-Size
BORING NUMBER: MW4-3	COORDINATES: N74		DATE:	, 14/93
ELEVATION: 4, 9/	GWL: Depth Date/Time		DATE STARTED: DATE COMPLETE	6/4/93
ENGINEER/GEOLOGIST: K. Dorsey DRILLING METHODS: Hollow Stern	Depth N/A Date/Time		PAGE 2	OF 1
T T T T T	TOBET / CPT CPT			
DEPTH (キャ) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (ゆ '') RECOVERY ()	DESCRIPTION	USC	Time	MARKS Organic Vapor or
16-18 TOX 22 Ta	Limestone n + Wet	MANA	Y/4	Background
18-20 21 21 Tax	Limestone ny Wet		14:45	in borna
End :	4 Berling		15:15	Finish -
				1
				-
				-
]
				=
				= = = = = = = = = = = = = = = = = = = =
]
NOTES: Drilling Contractor Drilling Solut Drilling Equipment Ford F-700 Mok	ions			
Drilling Equipment Ford F-700 Mok Driller: Kevin and Alex	oile Drill			
note: Bentonite pellets add	ted ate			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY, HARD	MORE THAN 4.0

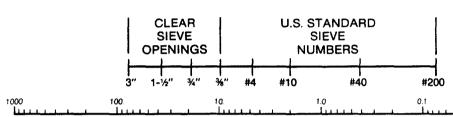
DENSITY OF GRANULAR SOILS

	-
DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
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0.001

0.0001



GRAIN SIZE IN MM

	GRAV	/EL		SAND		
COBBLES	COARSE	FINE	COARSE			SILT AND CLAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
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SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
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FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



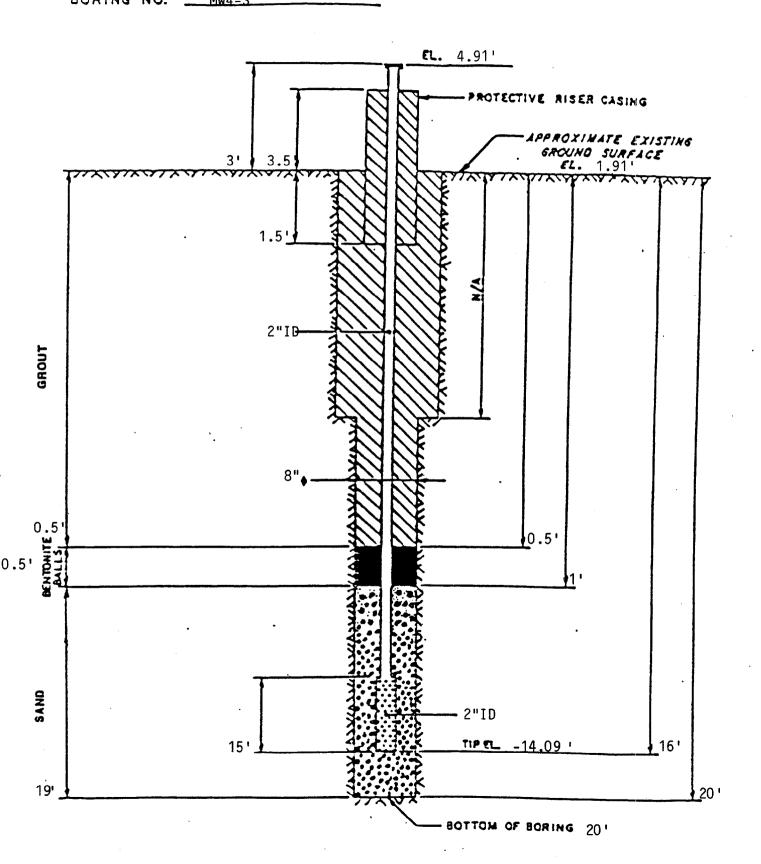
MONITOR WELL INSTALLATION SHEET

BOREHOLE DRILLING DRILLING METHOD Hollow Stem Auger DRILLING METHOD Hollow Stem Auger DRILLING FLUID (S) USED: N/A SIZE FROM TO SIZE SECTION SIZE OF PERFORATED SECTION 2" SIZE SECTION SIZE SECTION SIZE SECTION SIZE SECTION SIZE SECTION SIZE OF PERFORATIONS OF SIZE OF PERFORATIONS OF SIZE OF PERFORATIONS OF SIZE OF PERFORATION SIZE SECTION SIZE SECT	PROJECT NAME Key West Remedi PROJECT NO. 595392 BORING NO. MW4-3		FIELD ENG./GEO.		DATE 6/11/90 DATE 9/20/90	
DRILLING METHOD Hollow Stem Auger DRILLING FLUID (S) USED: N/A FLUID FROM TO SIZE FROM TO FLUID FROM TO SIZE FROM TO DESCRIPTION TYPE Sch. 40 PVC ASTM F480 and D170 DIAMETER OF PERFORATED SECTION 2" PERFORATION TYPE: SLOTS HOLES SCREEN X AVERAGE SIZE OF PERFORATIONS .010 TOTAL PERFORATED AREA 15' PROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH 5' PROTECTIVE PIPE O.D. 3 3/4' TOP OF RISER PIPE 3.0 GROUND SURFACE O.O 1.91 BOTHOM OF PROTECTIVE PIPE BOREHOLE FILL MATERIALS: GROUT ASTM C180 BENTONITE 3/8" Pellets SAND 20/30 S111ca, GROUND SURFACE SCTION 1.0 BENTONITE 3/8" Pellets SAND 20/30 S111ca, GROUND SURFACE SCTION 0.5 BENTONITE 3/8" Pellets SAND 20/30 S111ca, GROUND SURFACE SCTION 1.0 PERFORATED SECTION TOP 1.0 BOTTOM OF PROTECTIVE PIPE BOTTOM OF PROTECTIVE PIPE 1.5 BENTONITE 3/8" Pellets SAND 20/30 S111ca, GROUND SURFACE SCTION 1.0 PERFORATED SECTION TOP 1.0 BOTTOM 0.5 BENTONITE 3/8" Pellets SAND 20/30 S111ca, GROUND SURFACE SCTION 1.0 BOTTOM 0.0 PERFORATED SECTION TOP 1.0 BOTTOM 0.0 PROMETER FLUSHED AFTER INSTALLATION? YES NO (X) AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO (X) AS AS SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO (X) AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO (X) NO (X) ASR AS SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO (X) NO (X) ASR AS SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO (X) ASR AS SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO (X) ASR AS SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO (X) ASR AS SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO (X) ASR AS SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO (X) ASR AS PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO (X) ASR AS PIEZOMETER PUMPED BY CENTER INSTALLATION? YES NO (X)	MW4-3		DATE OF INSTALL	ATION	6/4/90	
DRILLING FLUID (S) USED: N/A FLUID FROM TO SIZE FROM TO DESCRIPTION TYPE Sch. 40 PVC ASTM F480 and D170 DIAMETER OF PERFORATED SECTION 2" PERFORATION TYPE: SLOTS HOLES SCREEN X AVERAGE SIZE OF PERFORATIONS .010 TOTAL PERFOPATED AREA 15' PROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH 5' PROTECTIVE PIPE O.D. 3 3/4' ITEM DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.) GROUND SURFACE (Ft.) TOP OF RISER PIPE BOTTOM OF PROTECTIVE PIPE BOTTOM TYPE I Cement TOP 0.0 BOTTOM 0.5 SAND 20/30 Silica, TOP 0.5 BOTTOM 1.0 BOTTOM 1.0 BOTTOM 1.0 PERFORATED SECTION TOP 1.0 BOTTOM N/A BOTTOM N/A PERFORATED SECTION TOP 1.0 BOTTOM N/A BOTTOM N/A PERFORATED SECTION TOP 1.0 BOTTOM OF BOTTOM 14.0 PIEZOMETER TIP BOTTOM OF BOREHOLE 20.0 GWL AFTER INSTALLATION? YES NO X ASS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? Well developed 6/4/90, approximately 20 gallons of water pumped by centrify	BOREHOLE DRILLING					
DRILLING FLUID (S) USED: N/A FLUID FROM TO SIZE FROM TO DESCRIPTION TYPE Sch. 40 PVC ASTM F480 and D170 DIAMETER OF PERFORATED SECTION 2" PERFORATION TYPE: SLOTS HOLES SCREEN X AVERAGE SIZE OF PERFORATIONS .010 TOTAL PERFOPATED AREA 15' PROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH 5' PROTECTIVE PIPE O.D. 3 3/4' ITEM DISTANCE ABOVE / BELOW GROUND SURFACE (Ft.) GROUND SURFACE (Ft.) TOP OF RISER PIPE BOTTOM OF PROTECTIVE PIPE BOTTOM TYPE I Cement TOP 0.0 BOTTOM 0.5 SAND 20/30 Silica, TOP 0.5 BOTTOM 1.0 BOTTOM 1.0 BOTTOM 1.0 PERFORATED SECTION TOP 1.0 BOTTOM N/A BOTTOM N/A PERFORATED SECTION TOP 1.0 BOTTOM N/A BOTTOM N/A PERFORATED SECTION TOP 1.0 BOTTOM OF BOTTOM 14.0 PIEZOMETER TIP BOTTOM OF BOREHOLE 20.0 GWL AFTER INSTALLATION? YES NO X ASS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? Well developed 6/4/90, approximately 20 gallons of water pumped by centrify	DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT	Rock Bit		
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DESCRIPTION TO	FLUIDFROM	TO	SIZE	FROM	то	
TYPE Sch. 40 PVC ASTM F480 and D170 DIAMETER OF PERFORATED SECTION 2" PERFORATION TYPE: SLOTS HOLES SCREEN X AVERAGE SIZE OF PERFORATIONS .010 TOTAL PERFORATED AREA 15' PROTECTION SYSTEM RISER PIPE DIAMETERS: O.D. N/A I.D. 2" LENGTH OF PIPE SECTIONS 4' JOINING METHOD Flush threaded with "O" rings to seal joints. PROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH 5' PROTECTIVE PIPE O.D. 3 3/4' OTHER PROTECTION Locking riser cap. Concrete pad 2'X2'X6" meets ASTM C150 ITEM GROUND SURFACE (Ft.) TOP OF RISER P:PE 3.0 GROUND SURFACE (Ft.) BOTTOM OF PROTECTIVE PIPE 1.5 O.40 BENTONITE 3/8" Pellets TOP 0.0 BENTONITE 3/8" Pellets SAND 20/30 Silica, GROUT ASTM C150 TOP 0.5 BENTONITE 3/8" Pellets TOP 0.5 BENTON OF D.5 GRAVEL N/A TOP N/A BOTTOM 16.0 TOP 0.91 BOTTOM -14.0 PIEZOMETER TIP BOTTOM OF BOREHOLE 20.0 GWL AFTER INSTALLATION 7 TOS THE PIEZOMETER? YES NO X SA S ASENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO X MARKS Mell developed 6/4/90, approximately 20 gallons of water pumped by centrify	FLUIDFROM	то				
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PIEZOMETER TIP BOTTOM OF BOREHOLE GWL AFTER INSTALLATION S THE PIEZOMETER FLUSHED AFTER INSTALLATION? AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? WARKS Well developed 6/4/90, approximately 20 gallons of water pumped by centrifications.	GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A	
BOTTOM OF BOREHOLE 20.0 18.09 GWL AFTER INSTALLATION 1.7 0.21 S THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO X AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO X WARKS Well developed 6/4/90, approximately 20 gallons of water pumped by centrifications.	PERFORATED SECTION	TOP 1.0	BOTTOM 16.0	TOP 0.91	BOTTOM -14.09	
GWL AFTER INSTALLATION 1.7 S THE PIEZOMETER FLUSHED AFTER INSTALLATION? AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? WARKS Well developed 6/4/90, approximately 20 gallons of water pumped by centrifications.						
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AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO X WARKS Well developed 6/4/90, approximately 20 gallons of water pumped by centrifications.	GWL AFTER INSTALLATION 1.7 0.21					
pump to produce stroysand rice, crear mater. Fump asea was a sin briggs and stractor						
a 1 to 2 gpm flow rate.						



MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BY K.Dorsey DATE 6/4/90
PROJECT NO. 595392 CHECKED BY G.Stephens DATE 9/23/90
BORING NO. MW4-3





PROJECT NUMBER: 5 95 - 392		PROJECT NAME: Key West Remedial Investigation-Site 4				
BORING NUMBER: MW 4-4	COORDINATES: N/A			5/90		
ELEVATION: 4,91		e 6/5/90 - 08/50	DATE STARTED:	6/5/90		
ENGINEER/GEOLOGIST: K. Dorsey		e ¼/⁄µ	PAGE /	D: 6/5/90 OF 2		
DRILLING METHODS: Hollow Stem	luger/Split Spoon		PAGE /			
DEPTH (\$\frac{1}{4},\] SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (\$\beta^{ll},\] RECOVERY ()	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	CONSTRUCTION	MARKS Organie Vapor(poni)		
[] VOA 3 1 /-2/- (/.)	mechany Fill w/Brosel	N/A N/A	8:50	0,0Ppm _ 6V4 _		
2-4 MOAL 1	Limestone Fill u/ Gravel		9:00	2.0ppm - 0VA -		
4-6 23	e mestone					
	et. Tan			- Hepmi - - SVA -		
	Limestone Ton		;	5рэт - OVA -		
2	e investone			6 PPM -		
[]	£ 1 × 1,8 13 1 5 1 ; € 19 ∀ 0 1 , 5			Зррт - ova -		
	Limestone			_		
NOTES: Drilling Contractor Drilling Solution Note: Bentonite pellets Drilling Equipment 1000 F 1000 Pellets Driller: Keyin - 2184 To hydrate						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

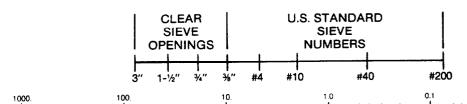
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	'EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY		
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS		
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS		
	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS		
HIGHLY ORGANIC SOILS	PŢ	PEAT. HUMUS. SWAMP SOILS WITH HIGH ORGANIC CONTENTS		



PROJECT NUMBER: 595 39 2	PROJECT NAME: Keuluiest I	Kemenio	DATE: 6/3/	
ELEVATION: 😂 😅		DATE STARTED: 6/5/90		
ENGINEER/GEOLOGIST: C DESCE	Depth N/A Date/Time		DATE COMPLETE	D: 5 つひ OF 2
DRILLING METHODS: Holica Syen &	loger/Split Speak	7	PAGE 🚣	OF _
DEPTH () SAMPLE TYPE & NO. BLOWS ON SAMPLER PER () RECOVERY ()	DESCRIPTION	USC	CONSTRUCTION (b)	MARKS
14-16 16 W 14-16 16 W 27 20 20 20 20 20 20 20 20 20 20 20 20 20	Dimestone Dimestone Dimestone Dimestone Doring	×/A N/A	9:50	1490m OVA 15pm 20pm CVA
NOTES: Drilling Contractor Drilling Equipment Ford 700 Driller: Alex	NOTE:		THE DETTE	

	<u></u>
	UNCONFINED COMPRESSIVE
CONSISTENCY	STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

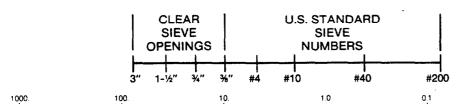
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

GRAVEL		/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LYTTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



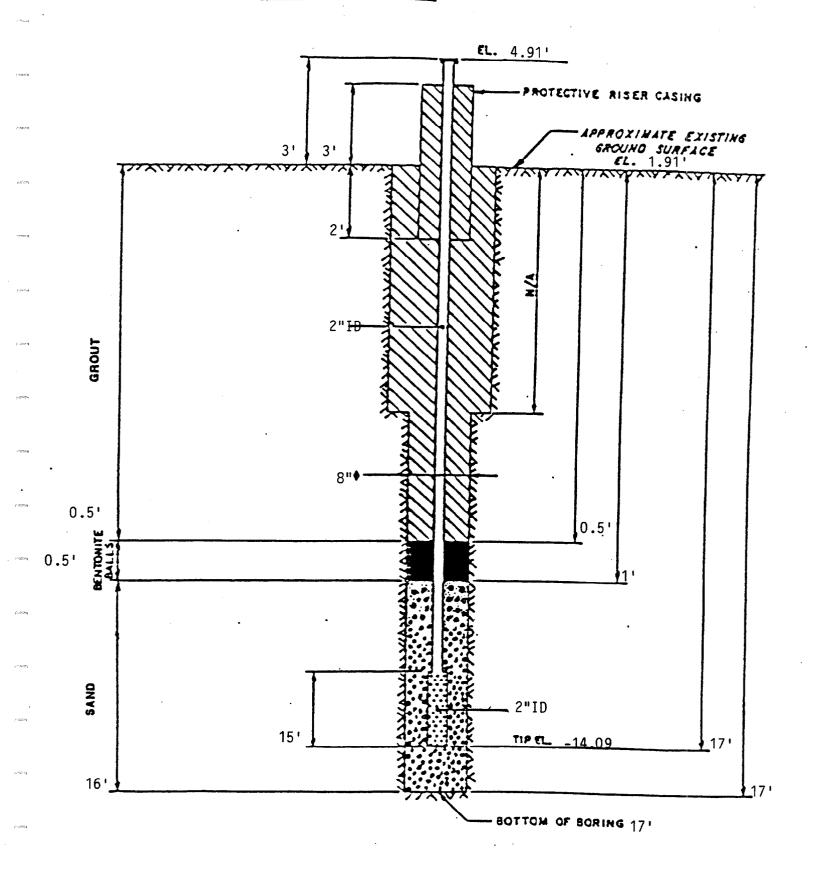
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remed	ial Investigation	FIELD ENG./GEO. CHECKED BY M.	<u>G Stephens</u> Hampton	DATE 6/4/90				
BORING NO. MW4-4		DATE . 9/20/90						
		DATE OF INSTALLATION 6/4/90						
BOREHOLE DRILLING								
DRILLING METHOD Hollow		TYPE OF BIT Rock bit						
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S)	CASING SIZE (S) USED: N/A					
FLUIDFROM	то	SIZE FROM TO						
FLUIDFROM	то		FROM					
DESCRIPTION								
TYPE Sch. 40 PVC ASTM FA	180 and D170	RISER PIPE MAT	ERIAL Sch.	40 PVC ASTM F480				
DIAMETER OF PERFORATED S	ECTION 2"	RISER PIPE DIAM	METERS:	and D170				
PERFORATION TYPE:		O.D	<u>N/A</u> 1.	D2"				
SLOTS HOLES	SCREEN X	LENGTH OF PIPE						
AVERAGE SIZE OF PERFORATI	ons	JOINING METHOD	Flush_threa	ded with "O"				
TOTAL PERFORATED AREA	15'	rings to seal joints.						
PROTECTION SYSTEM								
RISER PROTECTIVE PIPE LENG	GTH 5'	OTHER PROTECTION Locking riser cap.						
PROTECTIVE PIPE O.D.	3 3/4'	Concrete pad 2'X2'X6" meets ASTM C150						
ITEM		OVE/BELOW ELEVATION RFACE (Ft.) (MSL)						
TOP OF RISER PIPE	3	.0	4.91					
GROUND SURFACE	0	.0						
BOTTOM OF PROTECTIVE PIPE	2	.0 0.09						
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 0.5	TOP 1 91	воттом 1.41				
BENTONITE 3/8" Pellets	TOP 0.5	BOTTOM 1.0	TOP 1.91	BOTTOM 0.91				
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 20.0	TOP 0.91	BOTTOM -14.09				
A3 (M G772			TOP N/A	BOTTOM N/A				
GRAVEL N/A	TOP N/A	BOTTOM N/A						
GRAVEL N/A		BOTTOM 17.0	TOP 0.91	BOTTOM-14.09				
PERFORATED SECTION		BOTTOM 17.0		BOTTOM-14.09				
PERFORATED SECTION PIEZOMETER TIP	TOP 2.0	BOTTOM 17.0						
PERFORATED SECTION PIEZOMETER TIP BOTTOM OF BOREHOLE	TOP 2.0 20.0 1.2 FTER INSTALLAT MED ON THE PIE	BOTTOM 17.0	TOP 0.91	BOTTOM_14.09 -17.09 0.66				



MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BYG. StephensOATE 6/4/90
PROJECT NO. 595392 CHECKED BY M.Hampton DATE 9/20/90
BORING NO. MW4-4





PROJE	CT NUN	ABER:	95	392	PROJECT NAME: KE	Lies-	زر م کم	5 912	127	79 4 7 8 9 9	11-27-64	
BORIN	BORING NUMBER: MW4-5R				COORDINATES: k/Z					DATE: \$ \$ 3/90		
					GWL: Depth 3,08 Date/Time 5,33/90 - 3/00							
ENGIN	EER/GE	OLOGIS	T: <u>K</u>	Dorsey	Depth _{N/A}	Date/Time	•	,	DA	TE COMPLETE	D:6/23/90	
DRILLI	NG MET	HODS:	70	10W STEM A	Augering/Sc	1175	<u> </u>	()	PA	GE /	OF £	
									7			
DEРТН (Ұ҈ ¹ ,)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (\mathcal{L}_{ρ})	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	rei Time	MARKS Onganic Viluan pun	
		4	NA	0-,5' Top	50/1		64	NA	NA			
 	N. T.	209		.5'-2' Ooli +	tic Limesto	and the second second second second second	NA		•	13100	1.05	
- - 2~4-		63049 4049		-	THE LIMES	701) E					1.0 ppn;	
 4-6_	3-3	\$ 0.0 E			ic Limes answet	stone					1.0 s _{jan} ,	
		\$ 0.1-3			na lines	54671C					0 ppm -	
ا ا ا ا ا	25 50 S	28 17 21			-ic Linies n + wet	stone					0 ppm -	
<u>।</u> - ्र	2	18 22 22		10'-12' 001 +a	n + wet	stone			f		Oppm	
 		20 21 24			tic a mes	ton e			:		Oppn	
-		19					V	\	V		-	
		15	L				L	<u> </u>	<u> </u>		, 1	
Drilling	Contrac	ent FO	rd	ing Soluti F-700 Mob lex			ada to Dev aft	led c hydi lelop er b	na nat me nen		ed Grouting	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

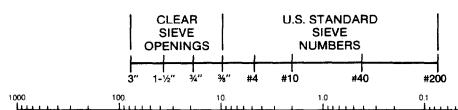
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

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0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAVEL		SAND			SILT AND CLAY			
	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAY			

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

OO/MIGE GIVINILE COILO							
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES					
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES					

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT .	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595	392 PF	ROJECT NAME: 犬さり	West	Re	11120	,.:/.	- nuestic	Tation Sixed	
BORING NUMBER: MW 4-		COORDINATES: NA					DATE: 6/23/93		
ELEVATION: 5,35		GWL: Depth ු ු කුරි Date/Time දුනු 3/95-73:00					DATE STARTED: 1/2/27		
ENGINEER/GEOLOGIST: K	Dorsey	Depth V/A Date/Time /				N/A DATE COMPLETED: 19 (39 (4)			
DRILLING METHODS: HD//D		138, 110 Si	117 5	Des	<i>5</i> /2	PAC	GE (OF 🛫	
						7			
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6") RECOVERY ()	DE	ESCRIPTION		USCS SYMBOL		WELL	_	iarks Organic Va <i>goripum</i>)	
18 M/A 18 M/A	14-16-0011+	ic Limes	tone 1	MA	N/A	NA			
31 31 10-18 23		ic Limes te y wet	· ၁/) &				:	Oppm	
		tic Limes		<u>\</u>		V.	13:45	0 ppm =	
	End or	Boring					2 1411 Buck 4	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
NOTES: Drilling Contractor Drilling Equipment Fond Driller: Kevin + Ale	ng Soluti F-700 Mob	1- 3 11	ande	أمرد	and	$l \cdot a$	lopmenter ber	- - - -	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

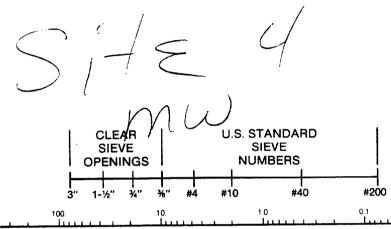
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

						FINAL TO THE PARTY OF THE PARTY
	GRA	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS. SILTY CLAYS, LEAN CLAYS
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY



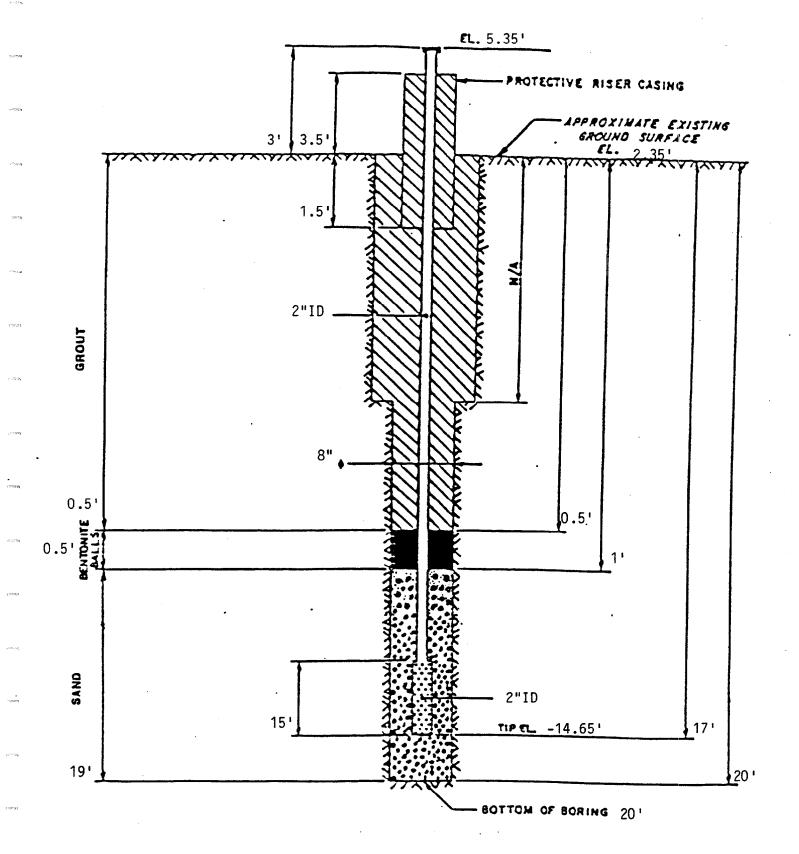
MONITOR WELL INSTALLATION SHEET

ROJECT NAME Key West Remed RCJECT NO. 595392		CHECKED BY G.		DATE 9/20/90
ORING NO. MW4-5R		-		
		DATE OF INSTALL	ATION	6/23/90
OREHOLE DRILLING				
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT_	Rock Bit	
DRILLING FLUID (S) USED:	N/A		USED: N/A	
FLUIDFROM	TO	SIZE	FROM	то
FLUIDFROM	то	SIZE	FROM	то
DESCRIPTION				
TYPE Sch. 40 PVC ASTM	F480 and D170	RISER PIPE MAT	ERIAL Sch. 40	PVC ASTM F480
DIAMETER OF PERFORATED S	ECTION 2"	RISER PIPE DIA	METERS:	and D170
PERFORATION TYPE:			N/A	
SLOTS HOLES	SCREEN X	LENGTH OF PIPE	SECTIONS	51
AVERAGE SIZE OF PERFORATI	ons	1	Flush threaded	
TOTAL PERFORATED AREA	15'	_rings_to_seal		
PROTECTIVE PIPE O.D.		Concrete pad	ON Locking ri 2'X2'X6" meets	ASTM C150
ITEM	DISTANCE AS	BOVE/BELOW IRFACE (Ft.)	ELE	VATION MSL)
TOP OF RISER PIPE		3.0		5.35
ROUND SURFACE	0	0.0		2.35
SOTTOM OF PROTECTIVE PIPE		1.5		.85
BOREHOLE FILL MATERIALS: GROUT Type I Cement	TOD	BOTTOM OF	TOD 2.25	00777014 1 1
GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets	TOP 0.0	BOTTOM 0.5	TOP 2.35	BOTTOM 1.8
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 20.0	700	BOTTOM 1.:
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/
PERFORATED SECTION	TOP 2.0	BOTTOM 17.0	TOP 0.35	BOTTOM-14
PIEZOMETER TIP			0.00	
BOTTOM OF BOREHOLE	20	.0		-17.65
WL AFTER INSTALLATION		.08		0.27
THE PIEZOMETER FLUSHED A A SENSITIVITY TEST PERFOR		ZOMETER?	YES NO	X X
ARKS <u>Well was develop</u> until clear and sand si	ed 6/23/90 by ca	entrifugal pump.	pumped approxi	<u>mately 15 gal</u>



MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BY K. Dorsey DATE 6/23/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 9/20/90
BORING NO. MW4-5R



Site 5 DDT Mixing Area

WELL CONSTRUCTION DETAILS - SITE 5

Boca Chica, DDDT Mixing Area NAS-Key West Key West, Florida IT Project No. 595392

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (11) MSL	GROUND SURFACE ELEVATION (11) MSL	TOTAL WELL DEPTH (n)	LENGTH OF SCREEN (N)	SCREENED INTERVAL ELEVATION (ff) MSL	SLOT SIZE (In)	THICKNESS OF SAND PACK (ft)	THICKNESS OF BENTONITE SEAL (N)	THICKNESS OF GROUT COLUMN (ft)	
MW 5-1	06/22/90	7.70	4.70	10	5	0.30 to -5.30	0.010	7.0	1.5 1.5	1.5	
MW 5-2	06/22/90	7.50	4.50	10	5	-0.50 to -5.50	0.010	7.0		1.5	
MW 5-3	06/22/90	7.47	4.47	10	5	-0.53 to -5.53	0.010	7.0	1.5	1.5	



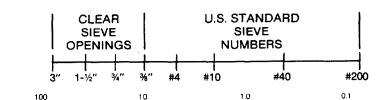
PROJECT NUMBER: 505 302	PROJECT NAME: Key West Re	medial Inv			
	COORDINATES:		DATE: 6/22/90		
	GWL: Depth 2 Date/Time	19122/90 - 15:10			
ENGINEER/GEOLOGIST: G, Stephens DRILLING METHODS: Hollow Som A	Depth N/A Date/Time	N/A	PAGE : OF /		
DRILLING WELLIODS. 1401100: C4-71: A	CAST / Spiri Spear		FAGE OF /		
DEPTH (\(\frac{\fir}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\fir}{\firitief{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\fir}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\fir}}}}{\firiii}}}}}}{\fr	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	REMARKS Onstruction Time Vas 520		
NIA NI- MA 2"TOP 30 I ID"- Limes Grout	Hone Fill	PT N/A M	15:05 ppm		
Limes	stone Fill				
Limes 4-6	rone fill				
6-8	tone				
sto V V X	Stone ful	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	15:30 lppm		
			- - - - - - - - - - - - - - - - - - -		
NOTES: Drilling Contractor Ford F-700 Mebiling Equipment F-7	le Drill Recent	Tritonite Julio Louis	ced to a such to		

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

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DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
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COARSE

GRAIN SIZE IN MM

FINE

0.001 0.0001

SAND.	SILT AND CLAY

USCS CLASSIFICATION FOR SOILS

FINE

MEDIUM

COARSE-GRAINED SOILS

GRAVEL

COARSE

1000

COBBLES

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
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(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
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SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
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FINE-GRAINED/HIGHLY ORGANIC SOILS

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SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



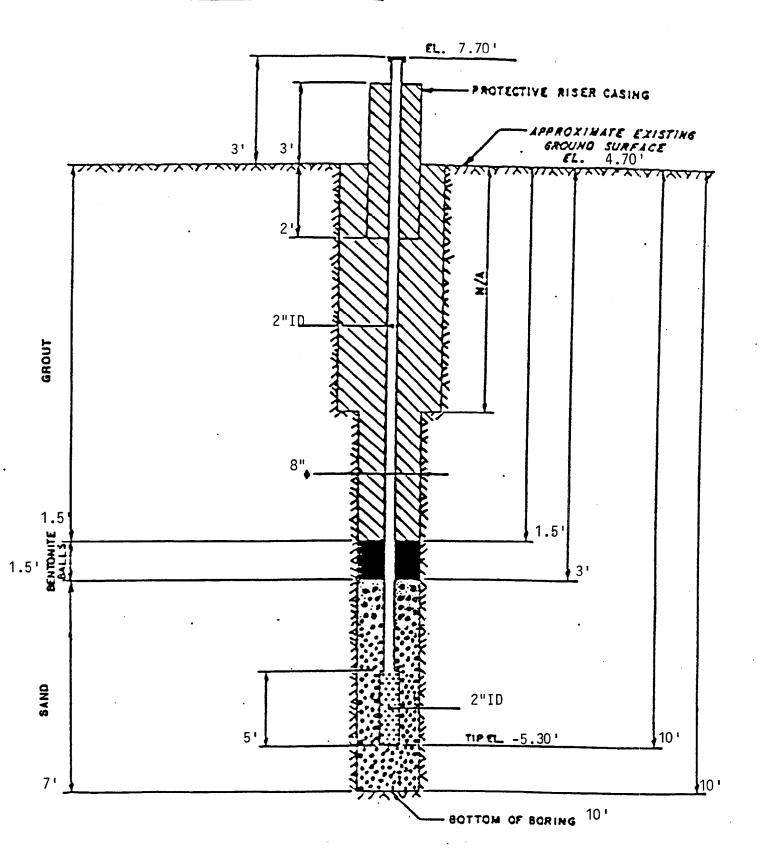
MONITOR WELL INSTALLATION SHEET

PERFORATION TYPE:	Stem Auger N/A TO TO TO SCREEN X	TYPE OF BIT_ CASING SIZE (S) SIZE_ SIZE_ RISER PIPE MAT RISER PIPE DIAM	Rock Bit USED: FROM FROM ERIAL Sch. 40 METERS:	N/A TO TO PVC ASTM F480 and D170			
BOREHOLE DRILLING DRILLING METHOD Hollow DRILLING FLUID (S) USED: FLUID FROM FLUID FROM DESCRIPTION TYPE Sch. 40 PVC ASTM F DIAMETER OF PERFORATED SI	Stem Auger N/A TO TO TO SCREEN X	TYPE OF BIT_ CASING SIZE (S) SIZE SIZE RISER PIPE MAT RISER PIPE DIAM O. DN/	Rock Bit USED: FROM FROM FROM CERIAL Sch. 40 METERS:	N/A TO . TO PVC ASTM F480 and D170			
DRILLING METHOD Hollow DRILLING FLUID (S) USED: FLUID FROM FLUID FROM DESCRIPTION TYPE Sch. 40 PVC ASTM F DIAMETER OF PERFORATED SI	Stem Auger N/A TO TO TO SCREEN X	TYPE OF BIT_ CASING SIZE (S) SIZE SIZE RISER PIPE MAT RISER PIPE DIAM O. DN/	Rock Bit USED: FROM FROM FROM CERIAL Sch. 40 METERS:	N/A TO . TO PVC ASTM F480 and D170			
PRILLING FLUID (S) USED: FLUID FROM FLUID FROM DESCRIPTION TYPE Sch. 40 PVC ASTM F DIAMETER OF PERFORATED SI	N/A TO TO TO =480 and D170 ECTION 2" SCREEN X	CASING SIZE (S) SIZE SIZE RISER PIPE MAT RISER PIPE DIAM O.DN/	USED: FROM FROM FROM CERIAL Sch. 40 METERS:	TO TO PVC ASTM F480 and D170			
FLUID FROM FROM DESCRIPTION TYPE Sch. 40 PVC ASTM F DIAMETER OF PERFORATED SI	TOTO F480 and D170 ECTION 2" SCREEN X	CASING SIZE (S) SIZE SIZE RISER PIPE MAT RISER PIPE DIAM O.DN/	USED: FROM FROM FROM CERIAL Sch. 40 METERS:	TO TO PVC ASTM F480 and D170			
FLUIDFROM DESCRIPTION TYPE Sch. 40 PVC ASTM F DIAMETER OF PERFORATED SI	TO F480 and D170 ECTION 2" SCREEN X	RISER PIPE MAT RISER PIPE DIAI O.DN/	FROMFROM	PVC ASTM F480 and D170			
FLUIDFROM DESCRIPTION TYPE Sch. 40 PVC ASTM F DIAMETER OF PERFORATED SI	TO F480 and D170 ECTION 2" SCREEN X	RISER PIPE MAT RISER PIPE DIAI O.DN/	FROMFROM	PVC ASTM F480 and D170			
TYPE Sch. 40 PVC ASTM F	F480 and D170 ECTION 2" SCREEN X	RISER PIPE MAT RISER PIPE DIAI O.DN/	ERIAL Sch. 40 METERS:	PVC ASTM F480 and D170			
DIAMETER OF PERFORATED SI	SCREEN X	RISER PIPE DIAI	METERS: 'A1.0	and D170			
DIAMETER OF PERFORATED SI	SCREEN X	RISER PIPE DIAI	METERS: 'A1.0	and D170			
1	SCREEN X	0.D. <u>N</u>	<u>'A</u> 1. C				
• •		1					
SLOTS HOLES	ONS 010		SECTIONS				
AVERAGE SIZE OF PERFORATI	U113	JOINING METHO	•				
TOTAL PERFORATED AREA		JOINING METHOD Flush threaded with "O"					
RISER PROTECTIVE PIPE LENG		OTHER PROTECT Concrete pac	TION <u>Locking ris</u> 1 2'X2'X6" meets				
ITEM	DISTANCE AB	OVE / BELOW ELEVATION RFACE (Ft.) (MSL)					
TOP OF RISER PIPE	3	7.70					
GROUND SURFACE	0.	0		4.70			
BOTTOM OF PROTECTIVE PIPE	2	.0		3.70			
BOREHOLE FILL MATERIALS:		•					
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1.5	TOP 4.70	воттом 3.20			
BENTONITE 3/8" Pellets	TOP 1.5	BOTTOM 3.0	TOP 3.20	BOTTOM 1.70			
SAND 20/30 Silica, ASTM C775	TOP 3.0	BOTTOM 10.0	TOP 1.70	BOTTOM -5.30			
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 5.0	BOTTOM 10.0	TOP -0.30	BOTTOM -5.30			
PIEZOMETER TIP	40.0			<i>E</i> 20			
	10.0			-5.30			
GWL AFTER INSTALLATION	2.0	•	<u> </u>	2.70			
THE PIEZOMETER FLUSHED A A SENSITIVITY TEST PERFOR MARKS Well was develop 15 gallons water clear wit was a Briggs and Stratton	MED ON THE PIEZ ed 6/23/90. Wa th some silt afte	COMETER? ter removed by r 20 minutes was	YES NO centrifugal pures clear and silt	X mp. Approximate t free. Pump used			



MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BY G.StephensDATE 6/22/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW5-1





PROJE	CT NUM	IBER: *	795	392	PROJECT NAME: 1/2	11/255	ر ج	Β . γ. γ. ζ. τ		p		
	G NUME				COORDINATES:	4				DATE: 1/2 23/40		
ELEVA		7,50			GWL: Depth & Date/Time 6/22/90 -14/05							
ENGIN	EER/GE	OLOGIS	<u>T: 💪,</u>	Stephens	Depth \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Date/Time	· N/	4			D: 5,22,40	
DRILLI	NG MET	HODS: ,	400	OW STRAIF	uger / Split	-coen			PA	GE /	OF /	
DЕРТН (Ş√,)		BLOWS ON SAMPLER PER ('\begin{align*}' \cdot	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	RE Time	MARKS	
	Plot 5 VOA	N/A	A/N	a" Too 110 L S	Sal Cax		N/A	NA	NA	1400	3 _{p:7} -	
- - - - - - - - - - - - - - - - - - -	N/A		: :	Oplitic	,						· -	
					imestone				A A A A A A A A A A A A A A A A A A A		- - -	
-6-8 -6-8	-		To the second se	Colific ?		e e			e and the second and address of the second and the		- -	
/ <u>- / - / / / - / - / - / -</u>	<u>.</u>		/	Och Ena	i niestore		¥		1	14,30	377/11	
						→ .						
				-		· · · · · · · · · · · · · · · · · · ·		<u></u>				
NOTE	S:	7		ing Sol		NOT	ë, ¯	Ben	-Di^	-C (2 5	
Drilling	Contrac	tor <u>+</u>	- 1 (/ - /	111C 0010	10 10 10 10 10 10 10 10 10 10 10 10 10 1			العالم ال	و نا	4/3	· wed	
Drilling	Equipm	ent 🗀	<u>rd</u>	F-700 MO	UITE OF THE							
Driller:	Keu	1114	416	<u> </u>						11797e		
						Blow a communin Lei	nic nic Jel	nts a ation	N/4 d:	due to friendly		

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

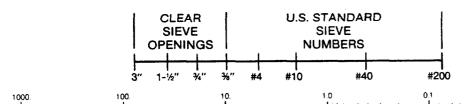
£.

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0-4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0 001

0.0001



GRAIN SIZE IN MM

7	GRAV	/EL	SAND				
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GΜ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

0.01

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

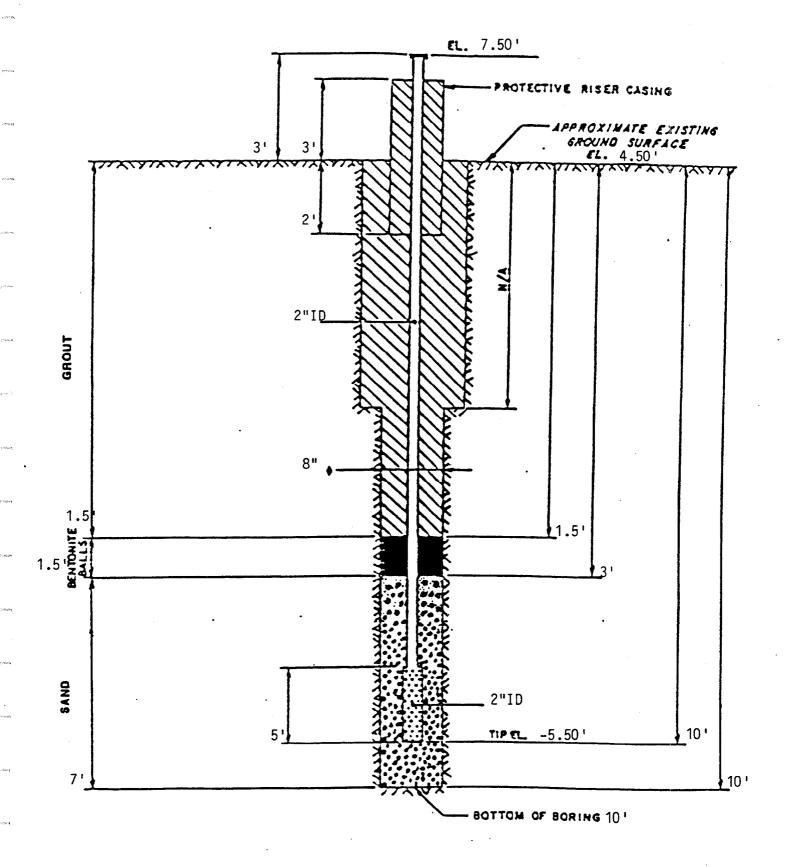


PROJECT NAME Key West Remed	ial Investigatio	FIELD ENG./GEO	• <u>G.Stephens</u>			
PROJECT NO. 595392	CHECKED BY M.	Hampton	DATE 9/20/90			
BORING NO. MW5-2		DATE OF INSTAL	ATION	6/22/90		
BOREHOLE DRILLING						
DRILLING METHOD Hollow S	tem Auger	TYPE OF BIT	Rock Bit			
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S) USED: N/A				
FLUIDFROM	то	SIZE	FROM	ТО		
FLUIDFROM	то	SIZE		то		
DESCRIPTION	l		٠			
TYPE Sch. 40 PVC ASTM	F480 and D170	RISER PIPE MAT	ERIAL Sch. 40	PVC ASTM F480		
DIAMETER OF PERFORATED S		RISER PIPE DIA	•	and D170		
PERFORATION TYPE:		1	<u>\/A</u> 1. D	2'		
SLOTS HOLES	SCREEN X		SECTIONS			
AVERAGE SIZE OF PERFORAT		1	Flush threade			
TOTAL PERFORATED AREA		_rings_to_sea				
		1 3				
PROTECTION SYSTEM						
RISER PROTECTIVE PIPE LEN	GTH 5'	OTHER PROTECT	ION Locking ris	er cap,		
PROTECTIVE PIPE O.D.		Concrete pad	2'X2'X6" meets A	STM C150		
ITEM		RFACE (Ft.)	ELE/	/ATION MSI)		
TOP OF RISER PIPE	3.		7.50			
GROUND SURFACE	0.	.0	4.50			
BOTTOM OF PROTECTIVE PIPE	2	.0		3.00		
BOREHOLE FILL MATERIALS:			4.50	2.00		
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1.5	TOP 4.50	воттом 3.00		
BENTONITE 3/8" Pellets	TOP 1.5	BOTTOM 3.0	TOP 3.00	воттом 1.50		
SAND 20/30 Silica, ASTM C775	TOP 3.0	BOTTOM 10.0	TOP 1.50	BOTTOM -5.50		
GRAVELN/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A		
PERFORATED SECTION	TOP 5.0	BOTTOM 10.0	TOP -0.50	BOTTOM -5.50		
PIEZOMETER TIP						
BOTTOM OF BOREHOLE	10.0		-5.50			
GWL AFTER INSTALLATION	VL AFTER INSTALLATION 2.0 2.50					
S THE PIEZOMETER FLUSHED A AS A SENSITIVITY TEST PERFORMARKSWell_developed_a	RMED ON THE PIE	ZOMETER? 90 Water remo	YES NO YES NO ved by centrifue clear filt free	X gal pump, approxi		
mately 10-15 gallons. Wa broke during SPT, had to d	<u>iter changed from</u> change ropes. Pun	n light grey to no used was a 5	HP Briggs and St	ratton with a		
flow rate of 1 to 2 gpm.	snange ropes. run	np asca mas a o i				



MONITOR WELL INSTALLATION SKETCH Key West Remedial

PROJECT NAME Investigation INSTALLED BY G.StephensOATE 6/22/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW5-2





PROJECT NUMBER: 595392 PROJECT NAME: Key West Remedia / Investigation-Size = 5							
BORING NUMBER MW 53	COORDINATES: NA				DATE: 6/22/90		
ELEVATION: チ, リア'	GWL: Depth 2,5" Date/Time 6/22/90-12:0			DATE STARTED: 6/22/90			
ENGINEER/GEOLOGIST: G. Stephens	Depth N 🔎 Dat	Date/Time N/A DATE COMP			TE COMPLETED	6 22 93	
DRILLING METHODS: Hollow Stem. Aug	er /Sp/17 Spoon			PAC	3E /	OF	
NO NO NO TA PER) TA PER)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	CONSTRUCTION	REMI Time	ARKS Organic Vapor (opn)	
0-2 POB 10' - L 0128	one Filldark co tone Fill	÷	N/4	Y	12:15	5 ppm _	
2-4- U/Some					.213 5	5 ppm _	
4-6	t injestone f.			:			
Saturata 68	a investone =					_	
840 V X Saronares	t insertone f	III	y .	· ·			
ENDO	F BORING					- - - - - - -	
Drilling Contractor Drilling Solutions Drilling Equipment Ford F-700 Mobile Drill Driller: Scill Tzzi, Alex + Ed Blow counts N/A due to communidation difficulties in Level "C"							

CONSISTENCT OF COTTESTAL COTES					
CONSISTENCY UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)					
VERY SOFT	LESS THAN 0.25				
SOFT	0.25 to 0.50				
FIRM	0.50 to 2.0				
HARD	2.0 to 4.0				

MORE THAN 4.0

VERY HARD

COBBLES

1000.

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(')				
VERY LOOSE	0 - 4				
LOOSE	5 - 10				
MEDIUM DENSE	11 - 30				
DENSE	31 - 50				
VERY DENSE	OVER 50				

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

SILT AND CLAY

0.001

0.0001

0.01 100. GRAIN SIZE IN MM

SAND

MEDIUM

#10

U.S. STANDARD

SIEVE **NUMBERS**

COARSE USCS CLASSIFICATION FOR SOILS

FINE

#200

COARSE-GRAINED SOILS

GRAVEL

FINE

COARSE

CLEAR SIEVE

OPENINGS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

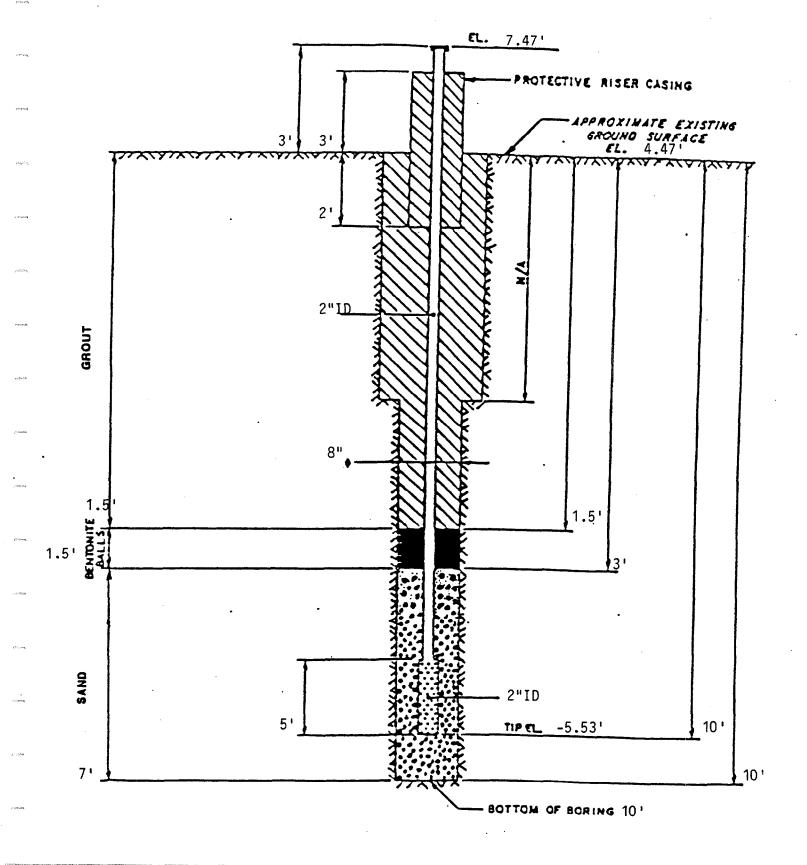
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS. ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CĽ	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NAME Key West Remedi	<u>al Investigation</u>	FIELD ENG./GEO.	.G.Stephens	DATE 6/22/90		
PRCJECT NC. 595392	CHECKED BY M.	Hampton	DATE 9/20/90			
BORING NO. MW5-3		DATE OF INSTALL	ATION			
		DATE OF INSTALL	.ATION6/22	<u> </u>		
BOREHOLE DRILLING						
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT	Rock Bit			
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S) USED: N/A				
FLUID FROM	TO	SIZE	FROM	_то		
FLUIDFROM	то		FROM			
DESCRIPTION						
TYPE Sch. 40 PVC ASTM	F480 and D170	RISER PIPE MAT	ERIAL Sch. 40 P	VC ASTM F480		
DIAMETER OF PERFORATED S		RISER PIPE DIAN	METERS:	and D170		
PERFORATION TYPE:		1	N/A1. O	•		
SLOTS HOLES	SCREEN X		SECTIONS			
AVERAGE SIZE OF PERFORATI	ONS010		Flush threaded			
TOTAL PERFORATED AREA	5'	<u>rings</u> to seal				
PROTECTION SYSTEM						
RISER PROTECTIVE PIPE LENG	GTH5'	OTHER PROTECT	ION Locking ri	ser cap,		
	PROTECTIVE PIPE O.D. 3 3/41			ASTM C150		
	OISTANCE AS	OVE/BELOW				
ITEM		RFACE (Ft.)	ELEVATION (MSI)			
TOP OF RISER PIPE	3.	0	7.47			
GROUND SURFACE	0.	0	·	4.47		
BOTTOM OF PROTECTIVE PIPE	2.	.0		2.97		
BOREHOLE FILL MATERIALS:		,				
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1.5	TOP 4.47	BOTTOM 2.97		
BENTONITE 3/8" Pellets	TOP 1.5	BOTTOM 3.0	TOP 2.97	BOTTOM 1.47		
SAND 20/30 Silica, ASTM C775	TOP 3.0	BOTTOM 10.0	TOP 1.47	воттом -5.53		
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A		
PERFORATED SECTION	TOP 5.0	BOTTOM 10.0	TOP -0.53	BOTTOM -5.53		
PIEZOMETER TIP						
BOTTOM OF BOREHOLE	10.0		-5.53			
GWL AFTER INSTALLATION 2.5 1.97						
S THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO X						
Well developed 6	/23/90. Water c	hanged from dark	silty color to	clear silt free,		
developed very quickly, pu		ly 15 gallons 'u	sing a 5 HP Brid	ggs and Stratton		
pump with a flow rate of 1 to 2 gpm.						



Rey West Remedial
PROJECT NAME Investigation INSTALLED BYG.Stephens DATE 6/22/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW5-3



Site 7 Fleming Key North Landfill

Well Construction Details
fleming Key
North Landfill
Site 7
NAS Key West
Key West, Florida

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE ELEVATION (ft)MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN	SCREENED INTERVAL ELEVATION (ft) MSL	SLOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
 MW 7-1	05/31/90	7.03	4.03	17	15	2.03 TO -12.97	0.010	16.0	0.5	0.5
 MW 7-2	05/31/90	8.06	5.06	17	15	3.06 TO -11.94	0.010] 19.0	0.5	0.5
 MW 7-3	05/31/90	4.31	1.31	20	17.5	-1.19 TO -18.69	0.010	18.5	0.5	1.0
MW 7-4	05/30/90	10.05	7.05	18	15	4.05 TO -10.95	0.010	 17.0	1.5	1.5
MW 7-5	05/30/90	9.12	7.12	18	15	4.12 TO -10.88	0.010	18.0	1.0	1.0
 MW 7-6 	 05/31/90 	7.15	 4.15 	17	15	2.15 TO -12.85	0.010	 16.0 	0.5	0.5

Comment Commen

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[DDQ IS	CT NII IN	4BCD.	·	200	PROJECT NAME:\		2 .	•	`\	1 :	- = =
		IBER: -	·	_ 	PROJECT NAME: Very	Maria A Ca	0.4	- Vik.	DA.		CT.
	IG NUME	SEN:		1-5	GWL: Depth 3.3	Date/Time	-1-			TE:	30/90 : 5/30/40
ELEVA		OLOGIS	7.0		<u> </u>	Date/Time		<u>*0. a</u>			TED: 5/30/90
	ING MET				Depth \			1.7	PAG		OF \
DHILL	ING ME	HODS:		tolions stem	Aucrel Spirt	Siva	<u>. </u>			<u>σε</u> \	
оертн (-{┤`)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	_	EMARKS Chaanic Vacors (2011)
) -	H [A	エ,13.15,17	1 1		soch of Roots		79	44	N/2	11:05	1 ppm
- 3\- 1\-		H 3		2-3' Unsain 3-4 Saturat	ated Crushed L ed Crushed L	inectore	410				1 ppm -
- `-		1.1		5'10"-6 Dark	rated Crusted Linuary	estone	1				3 66w
-8-		5,5		JA 3461	Cathology Lu Gracyants Sulvatural Lu						18pm -
- \J		5,4		4-10' Dar	Tangarite _					11.15	366c -
-13-		7,00		3 4 400	e cometa) Notae	ALLA IM HERITATION			-		g 55m -
14		0,6		- Coline	e constated herechone			-			1 Stew
-16-	E9.1	5) 12, 30 43,31		19-18	e Submaked E Submaked	•					10 pp
18	V~+~7 ∠0×1	33,30		1100 31-01	ic hinestea	e,520's				ļ.	157pm -
										hole of stem of the world.	1401 co) =
-											17 Kor 18 -
Drillin	NOTES: Drilling Contractor										
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res	10: B	enter	. k .s.	pellete 23	31:61 9 6:61 18 10 Faran	T 018	alle	અ€ે)	فرد	meigh	a te

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

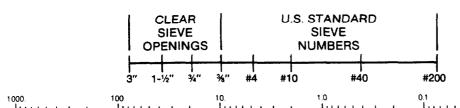
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAV	/EL	SAND			SILT AND CLAY		
	COARSE	FINE	COARSE	MEDIUM	FINE	SIET AND GEAT		

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

0.01

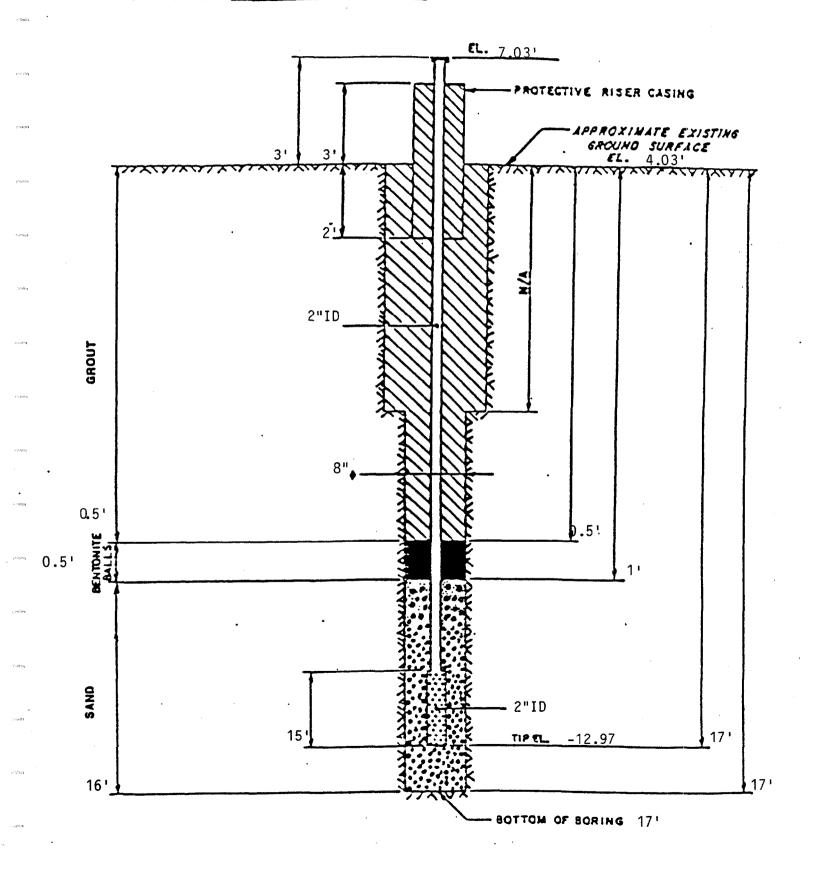
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NAME Key West Remed		FIELD ENG./GEO. CHECKED BYM DATE OF INSTALL	Hampton	DATE 9/20/90		
BOREHOLE DRILLING				731790		
DRILLING METHOD Hollow S. DRILLING FLUID (S) USED: FLUID FROM FLUID FROM	N/A TO					
TYPE Sch. 40 PVC ASTM F41 DIAMETER OF PERFORATED SI PERFORATION TYPE: SLOTS HOLES AVERAGE SIZE OF PERFORATION TOTAL PERFORATED AREA PROTECTION SYSTEM	SCREEN X	RISER PIPE DIAM O.D. <u>N</u> LENGTH OF PIPE	/A I.D. SECTIONS 5 Flush threaded	and D170 2"		
RISER PROTECTIVE PIPE LENG	3 3/4'	OTHER PROTECTION Locking riser cap, Concrete pad 2'X2'X6" meets ASTM C150 BOVE/BELOW ELEVATION				
TOP OF RISER PIPE GROUND SURFACE	GROUND SUI 3.	RFACE (Ft.)	7.03 4.03			
BOREHOLE FILL MATERIALS:	2.	0	2	.03		
GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A PERFORATED SECTION	TOP 0.0 TOP 0.5 TOP 1.0 TOP N/A TOP 2.0	BOTTOM 0.5 BOTTOM 1.0 BOTTOM 17.0 BOTTOM N/A BOTTOM 17.0	TOP 4.03 TOP 3.53 TOP 3.03 TOP N/A TOP 2.03	BOTTOM 3.53 BOTTOM 3.03 BOTTOM -12.97 BOTTOM N/A BOTTOM -12.97		
PIEZOMETER TIP BOTTOM OF BOREHOLE GWL AFTER INSTALLATION	EZOMETER TIP OTTOM OF BOREHOLE 17.0			-12.97 1.10		
S THE PIEZOMETER FLUSHED AFTER INSTALLATION? AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? Well grouted and developed 6/1/90. Water removed by Centrifugal pump, 20 gallons, water changed from grey silty to clear, sand free. Development completed at 13:15. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.						



Key West Remedial PROJECT NAME Investigation INSTALLED BY G. StephensDATE 5/31/90 PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/21/90 BORING NO. MW7-1





PROJECT NUMBER: 595392	PROJECT NAME: لمحير يريكون يم في	PROJECT NAME: Key with Rendial Investigation 5 to # 7					
BORING NUMBER: ハンスーン	COORDINATES: 3 N/K						
ELEVATION: 8.06	GWL: Depth 4'8" Date/Time	e 5/31/70 13:55	DATE STARTED: ら/20/90				
	Depth Date/Time		DATE COMPLETED: 5/31/90				
	Aven I Suit Secon	ent 1 Subst Sucon					
ENGINEER/GEOLOGIST: G. SAMPLE TYPE & NO. TYPE & TYPE & NO. TYPE & TYPE & NO. TYPE & NO	Depth Date/Time Description DESCRIPTION Soil Unsaturated Linestone Hed constituted Linestone Hed	MEASURED CONSISTENCY (TSF)	DATE COMPLETED: 5/31/90 PAGE ! OF !				
14-16 Compate 18,28 18-30 07-001 34,33	programments Is control Sandy Linectone or uted Crushed Cinestone (used solitic Linectone (used solitic Linestone (used solitic Linestone		Burround to Burround to To take contain Tox Tox End of Borro 15:05 dppr End of Borro 15:05 1:540				
NOTES: Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 misht dill Driller: Nick and Angelo Note: bentonte pellets added a 1545 and allowed to hydric Crosting and local or a office.							

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

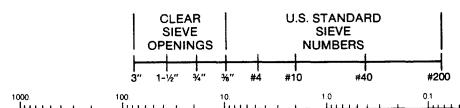
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAVEL		SAND			SILT AND CLAY	
	COARSE	FINE	COARSE	MEDIUM	FINE	SIL! AND CLA!	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

0.01

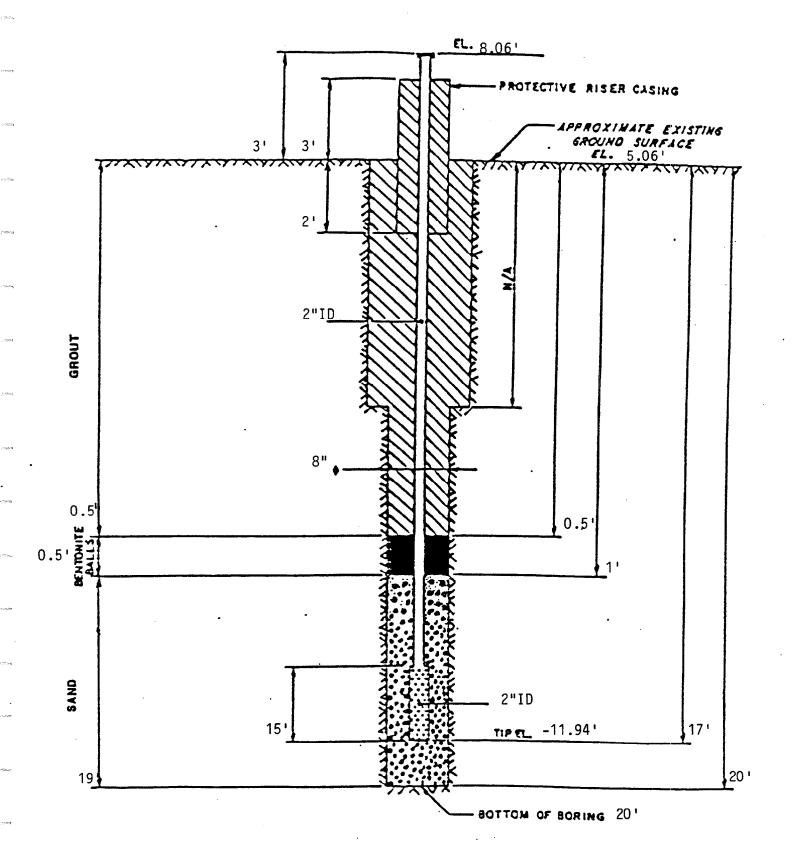
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS; SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NAME Key West Remed PROJECT NO. 595392 BORING NO. MW7-2		CHECKED BY M.	Hampton	DATE 9/20/90				
ORING NO. MW7-2		DATE OF INSTAL	LATION	5/31/90				
OREHOLE DRILLING								
DRILLING METHOD Hollow S	tem Auger	TYPE OF BIT_	Rock Bit					
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S) USED: N/A						
FLUID FROM	то	SIZE	FROM	TO				
FLUID FROM	то		FROM					
DESCRIPTION			•					
TYPE Sch. 40 PVC ASTM F	480 and D170	RISER PIPE MATERIAL Sch. 40 PVC ASTM F480						
DIAMETER OF PERFORATED S	ECTION 2"	RISER PIPE DIAMETERS: and D170						
PERFORATION TYPE:		O.D. N/A 1.D. 2"						
SLOTS HOLES	SCREEN X	LENGTH OF PIPE SECTIONS 5'						
AVERAGE SIZE OF PERFORATI	ONS010	JOINING METHOD Flush threaded with "0"						
TOTAL PERFORATED AREA	15'	rings to seal joints.						
ROTECTION SYSTEM								
RISER PROTECTIVE PIPE LENG	GTH 5'	OTHER PROTECT	TION Locking ri	ser cap.				
PROTECTIVE PIPE O.D.	3 3/4'	_Concrete pad 2'X2'X6" meets ASTM C150						
ITEM	DISTANCE AE	BOVE / BELOW RFACE (Ft)		VATION				
TOP OF RISER PIPE	1	RFACE (Ft) (MSL) .0 8.06						
GROUND SURFACE		o 5.06						
BOTTOM OF PROTECTIVE PIPE		.0		3.06				
BOREHOLE FILL MATERIALS:		<u> </u>						
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 0:5	TOP 5.06	BOTTOM 4.56				
BENTONITE 3/8 " Pellets	TOP 0.5	BOTTOM 1.0	TOP 4.56	BOTTOM 4.06				
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 20.0	TOP 4.06	BOTTOM _14.94				
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A				
PERFORATED SECTION	TOP 2.0	BOTTOM 17.0	TOP 3.06	BOTTOM -11.94				
PIEZOMETER TIP								
BOTTOM OF BOREHOLE	20.0	-14.94						
NUL ACTED INCTALL ATION	4.6			0.40				
WE AFTER INSTALLATION								
		10N2	YES NO					
THE PIEZOMETER FLUSHED A	FTER INSTALLAT							
THE PIEZOMETER FLUSHED A A SENSITIVITY TEST PERFOR ARKS Well grouted and mately 20 gallons. Water	FTER INSTALLAT MED ON THE PIE developed 6/1/90	ZOMETER? . Water remov	YES NO	X gal pump, appro				



Key West Remedial
PROJECT NAME Investigation INSTALLED BYG_Stephens DATE 5/31/90
PROJECT NO. 595392 CHECKED BY M_Hampton DATE 9/20/90
BORING NO. MW7-2





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		BER: M			PROJECT NAME: COORDINATES:	N/A	NEM	nearc	, j k		n + 7 5/3//90	
ELEVA			31 Fi		GWL: Depth 9"	Date/Time	a .>/	633 - 174:		TE STARTED		70
		OLOGIS	7: 3	Strokens.	Depth N/2					TE COMPLE		
DRILLI	NG MET	HODS:			Uger / SE/.	t Secret	14/		PA		OF /	, ' '
						r Joan	T	7		<u> </u>		
DEPTH (निंद.)		BLOWS ON SAMPLER PER	RECOVERY ()	.i	DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION		EMARKS Organ Valca	le (PPn
 	N/A	8	MA	9" Top	Coil		PT	44	4 07	17:15	1	
0-2		10 7 7 8		•	Crushed Lim	e Stone	N/.2				1	
 	:	7 2 3			ushed Lime						; ; ; ;	· -
		ગુજા જ		Limesta	ine w/ Shell	fragments					/ /	_
[4-6]	!	LĨ.]
	1	2 2	:	6-7' Limest	,						10	-
6-8		1		7'-8' S Lin Silty Li	ilty Odor	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~			:		20 30	=
		1 10			me Stone					17:25	100	-
-6-10- 		25 34 41		Silty Li w/small	me Stone Colites				To the state of th	Burrow Sound	5 5 com 5	, <u>-</u>
<u> </u>	Sacra Co.	50 16 44 43		Oolitic Shell &	himestore ragments.	ω/	<u>.</u>	1		17150 Partous to 16	5 5	
18-20		36		Ena c	S Bereing					to to	.	_
NOTE	S:	Dr	: 11:	ng Solution	١	NOTE: 3	Ser	notr	17 C	pe e	- 3	
Drilling	Contrac	πor Σ΄	~~ F	-700 Mobil	!e dc://					daile.		
				- Zelo		. -	- U	11,0		re		

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

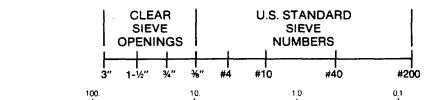
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAV	'EL	SAND		SILT AND CLAY	
	COARSE	FINE	COARSE	MEDIUM	FINE	SIET AND CEAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

0.01

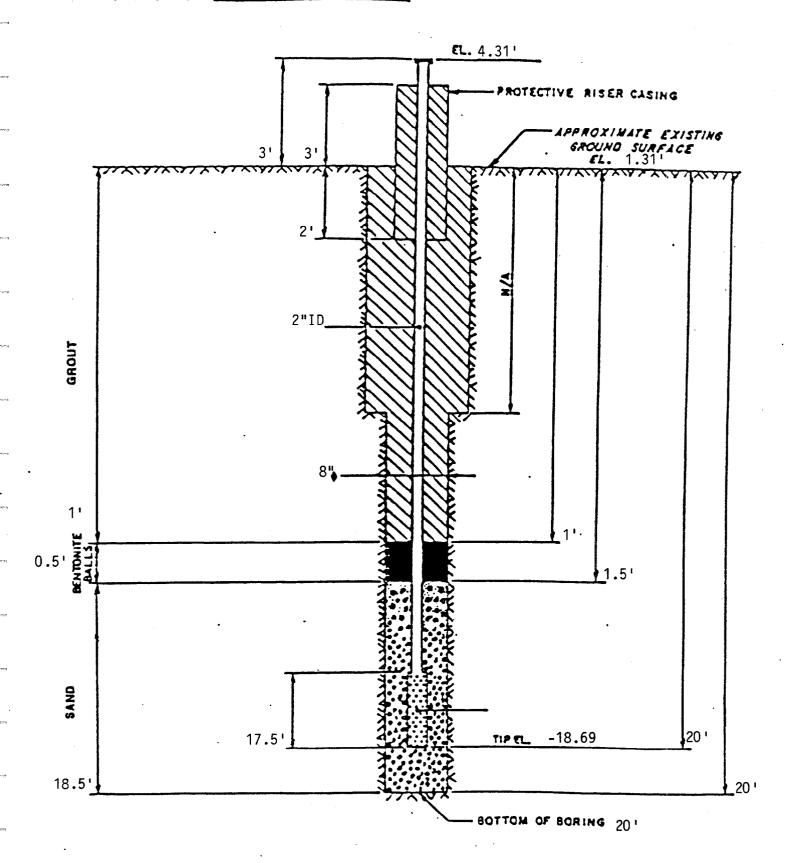
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
!	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	- ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



	D170 2" EEN X 10	RISER PIPE I RISER PIPE I O.D LENGTH OF F JOINING METrings_to	FROCK FROCK	OM_OM_OM_OS:I.DONS_sh threadts.	N/A TO TO PVC ASTM F480 and D170 2" 5.5' led with "0"		
DRILLING METHOD Hollow Stem Auge DRILLING FLUID (S) USED: N/A FLUID FROM TO FLUID FROM TO DESCRIPTION TYPE Sch. 40 PVC ASTM F480 and DIAMETER OF PERFORATED SECTION PERFORATION TYPE: SLOTS HOLES SCRE AVERAGE SIZE OF PERFORATIONS 0 TOTAL PERFORATED AREA 17.5' ROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH PROTECTIVE PIPE O.D. 3 3/4' ITEM DIST GROUND SURFACE	D170 2" EEN X 10	RISER PIPE I RISER PIPE I O.D LENGTH OF F JOINING METrings_to	FR F	OMSch. 40 S:I.D ONSsh thread ts.	TO		
PRILLING FLUID (S) USED: N/A FLUID FROM TO FLUID FROM TO DESCRIPTION TYPE Sch. 40 PVC ASTM F480 and DIAMETER OF PERFORATED SECTION PERFORATION TYPE: SLOTS HOLES SCREEN AVERAGE SIZE OF PERFORATIONS 0 TOTAL PERFORATED AREA 17.5' ROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH PROTECTIVE PIPE O.D. 3 3/4' ITEM DIST GROUND SURFACE	D170 2" EEN X 10	RISER PIPE I RISER PIPE I O.D LENGTH OF F JOINING METrings_to	FR F	OMSch. 40 S:I.D ONSsh thread ts.	TO		
PRILLING FLUID (S) USED: N/A FLUID FROM TO FLUID FROM TO DESCRIPTION TYPE Sch. 40 PVC ASTM F480 and DIAMETER OF PERFORATED SECTION PERFORATION TYPE: SLOTS HOLES SCREEN AVERAGE SIZE OF PERFORATIONS	D170 2" EEN X 10	RISER PIPE I RISER PIPE I O.D LENGTH OF F JOINING METrings_to	FR F	OMSch. 40 S:I.D ONSsh thread ts.	TO		
DESCRIPTION TYPE Sch. 40 PVC ASTM F480 and DIAMETER OF PERFORATED SECTION PERFORATION TYPE: SLOTS HOLES SCREAVERAGE SIZE OF PERFORATIONS .0 TOTAL PERFORATED AREA 17.5' ROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH PROTECTIVE PIPE O.D. 3.3/4' ITEM GROTOP OF RISER PIPE GROUND SURFACE	D170 2" EEN X 10	RISER PIPE I RISER PIPE I O.D LENGTH OF F JOINING METrings_to	MATERIAL DIAMETERS N/A PIPE SECTION Seal join	Sch. 40 S:I.D DNSsh thread ts.	PVC ASTM F480 and D170 2" 5.5' led with "0"		
DESCRIPTION TYPE Sch. 40 PVC ASTM F480 and DIAMETER OF PERFORATED SECTION PERFORATION TYPE: SLOTS HOLES SCREAVERAGE SIZE OF PERFORATIONS .0 TOTAL PERFORATED AREA 17.5' ROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH PROTECTIVE PIPE O.D. 3.3/4' ITEM GROTOP OF RISER PIPE GROUND SURFACE	D170 2" EEN X 10	RISER PIPE I RISER PIPE I O.D LENGTH OF F JOINING METrings_to	MATERIAL DIAMETERS N/A PIPE SECTION Seal join	Sch. 40 S:I.D DNSsh thread ts.	PVC ASTM F480 and D170 2" 5.5' led with "0"		
TYPESch 40_ PVC_ASTM_F480_and_ DIAMETER OF PERFORATED SECTION PERFORATION TYPE: SLOTS HOLES SCRE AVERAGE SIZE OF PERFORATIONS0 TOTAL PERFORATED AREA 17_5' ROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH PROTECTIVE PIPE O.D 3_3/4' ITEM DIST GROUND SURFACE	2" EEN X 10	RISER PIPE I O.D LENGTH OF F JOINING METrings_to OTHER PROT	N/A PIPE SECTION_LC	S: I.D ONS sh thread ts.	and D170 2" 5.5' led with "0" ser cap,		
DIAMETER OF PERFORATED SECTION_ PERFORATION TYPE: SLOTS HOLES SCRE AVERAGE SIZE OF PERFORATIONS0 TOTAL PERFORATED AREA 17.5' ROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH_ PROTECTIVE PIPE O.D 3 3/4' ITEM DIST GROUND SURFACE	2" EEN X 10	RISER PIPE I O.D LENGTH OF F JOINING METrings_to OTHER PROT	N/A PIPE SECTION_LC	S: I.D ONS sh thread ts.	and D170 2" 5.5' led with "0" ser cap,		
DIAMETER OF PERFORATED SECTION_ PERFORATION TYPE: SLOTS HOLES SCRE AVERAGE SIZE OF PERFORATIONS	2" EEN X 10	RISER PIPE I O.D LENGTH OF F JOINING METrings_to OTHER PROT	N/A PIPE SECTION_LC	S: I.D ONS sh thread ts.	and D170 2" 5.5' led with "0" ser cap,		
SLOTS HOLES SCRE AVERAGE SIZE OF PERFORATIONS0 TOTAL PERFORATED AREA17.5' ROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH PROTECTIVE PIPE O.D3 3/4' ITEM	5'	LENGTH OF F JOINING METrings_to OTHER PROT	PIPE SECTION LC	ons_sh_threadts.	5.5' led with "O"		
AVERAGE SIZE OF PERFORATIONS	5'	LENGTH OF F JOINING METrings_to OTHER PROT	PIPE SECTION LC	ons_sh_threadts.	5.5' led with "O"		
TOTAL PERFORATED AREA	5'	rings_to	seal join	ts.	ser cap,		
ROTECTION SYSTEM RISER PROTECTIVE PIPE LENGTH PROTECTIVE PIPE O.D 3 3/4' ITEM TOP OF RISER PIPE BROUND SURFACE	5'	rings_to	seal join	ts.	ser cap,		
RISER PROTECTIVE PIPE LENGTH		Ł .					
FOP OF RISER PIPE ROUND SURFACE		Concrete pad 2'X2'X6" meets ASTM C150					
TOP OF RISER PIPE GROUND SURFACE		BOVE/BELOW ELEVATION (MSL)					
	2.	.5'		4.31			
OTTOM OF PROTECTIVE PIPE	0	.0		1.31			
	3.	0 -1.19			-1.19		
BOREHOLE FILL MATERIALS:		·					
GROUT Type I Cement TOP	0.0	BOTTOM 1.0	O TOP	1.31	BOTTOM 0.3		
BENTONITE 3/8" Pellets TOP	1.0	BOTTOM 1.		0.31	BOTTOM -0.1		
SAND 20/30 Silica, TOP	1.5	BOTTOM 20.0		0.19	BOTTOM -18.6		
GRAVEL N/A TOP	N/A	BOTTOM N/		N/A	BOTTOM N/A		
ERFORATED SECTION TOP	2.5	BOTTOM 20.	0 TOP	-1.19	Воттом -18.6		
PIEZOMETER TIP							
SOTTOM OF BOREHOLE		-18.69					
THE PIEZOMETER FLUSHED AFTER INS A SENSITIVITY TEST PERFORMED ON	STALLAT	•	YES YES		0.5 X		
rapidly from light grey to clear by 18:15. A 2.5' extension with c		an Water n	emoved by	centrif	ugal pump, char		



PROJECT NAME Investigation INSTALLED BY G. Stephen DATE 5/31/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/21/90
BORING NO. MW7-3





PROJE	CT NUM	MBER: 5	95 3	392	PROJECT NAME: K	u West	- Re	medi	al :	Investigat.	on Site#1
		BER: M			COORDINATES: N	<u> </u>			DA	re: 3-/	30/90
ELEVA.			0.0	5	GWL: Depth 5'9"	Date/Time					130/90
ENGIN	EER/GE	OLOGIS	T: 💃	, - 17.	Depth N/A	Date/Time	, ' A	<u> </u>		TE COMPLETED:	6/1/90
DRILLI	NG MET	HODS: ;	4011	ow Stem Ave	er Split Si	20011			PAG	3E /. (OF ' '/
DEРТН (%)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	remai Time	aks Organic Vapors (pr
	N/A	5 13 9 9	NA		op Soil ht LimeStone		PT NJA	12/2	[] 	15:00	1 -
0-2- - - 2-4-		2019		a' Br	own, poorly Limestone						
46-		8 16 15 19			bove ht Limestone	2 fill					ع ع <u>-</u>
6-8_		5 5 4 4		l' Lig	ht Limeston	ne Sill					ے ع <u>-</u>
 8-10		4321	Construction of the second of	, ,	own Limester ght Limes			An analysis of the control of the co		15:25	2 -
и-16_		34 11 24 63		Limes	Hone oolit					Sucree!	` 0
18-30	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	30 33	3°1/				· ·			1000 1000 1000 1000	0 -
-				$\mathcal{Z}_{C,\delta}$	50000	9				15:30	-
Drillin Driller	g Contra g Equipr	ment E	2+: 2-::: 5-:::	ean clean Al	on solidation	s washe	nd ed i	11113 n Ala	: w	pellets	
1.	al	1 Pla	icea	on visqui	ne, stored in	1 labele	ia C	11.0W			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

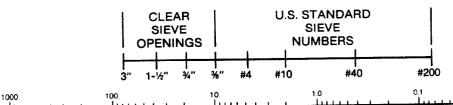
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(") STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAVEL		SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS. GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	sw	WELL-GRADED SANDS, GRAVELLY SANDS. LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

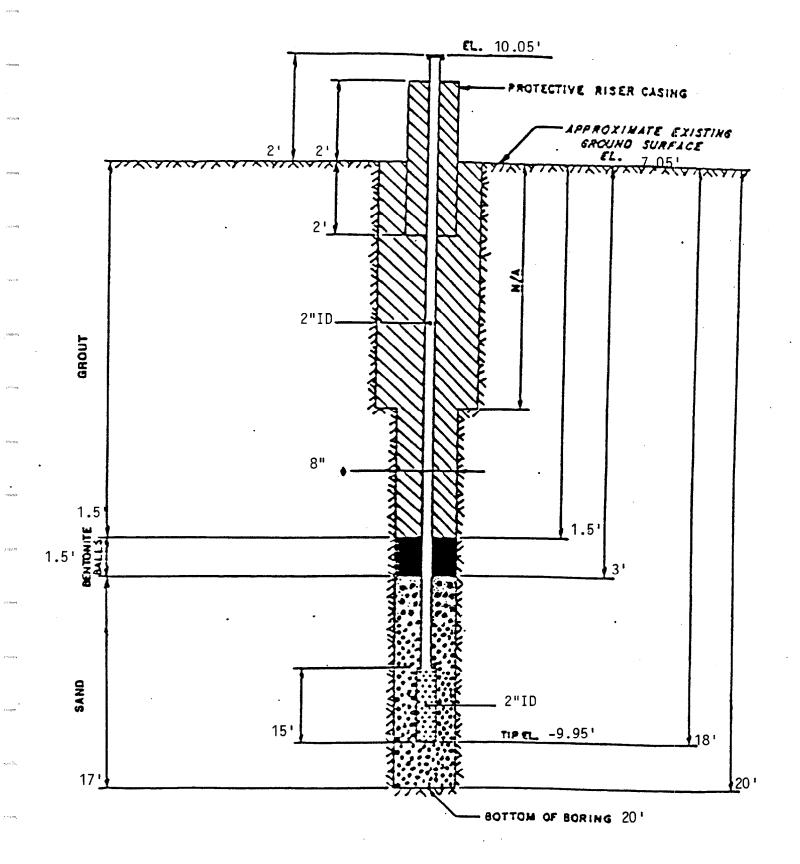
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY					
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS					
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY					
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	мн	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS					
	CH ·	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS					
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS					
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS					



PROJECT NAME Key West Remed PROJECT NO. 595392	ial Investigation	FIELD ENG./GEO. CHECKED BY M	G. Stephens Hampton	DATE 5/30/90 DATE 9/21/90			
ORING NO. MW7-4		DATE OF INSTALL	ATION	5/30/90			
SOREHOLE DRILLING				-			
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT	Rock Bit				
DRILLING FLUID (S) USED:		<u>.</u>	USED: N/A				
FLUID FROM	то	1	FROM	то			
FLUIDFROM			FROM				
DESCRIPTION							
TYPE Sch. 40 PVC ASTM F	480 and D170	RISER PIPE MAT	ERIAL Sch. 40) PVC ASTM F480			
DIAMETER OF PERFORATED SI		RISER PIPE DIA		and D170			
PERFORATION TYPE:		i	N/AI. D	. 2"			
SLOTS HOLES	SCREEN X		SECTIONS				
AVERAGE SIZE OF PERFORATI	ONS	i .	Flush threade				
TOTAL PERFORATED AREA	15'	_rings to seal					
PROTECTION SYSTEM							
RISER PROTECTIVE PIPE LENG	GTH 5'	OTHER PROTECT	ION <u>locking</u> r	iser cap.			
PROTECTIVE PIPE O.D.		Concrete pad 2'X2'X6" meets ASTM C150					
ITEM		BOVE/BELOW RFACE (Ft.)	ELEVATION (MSL)				
TOP OF RISER PIPE	3	.0	10. 05				
GROUND SURFACE	0	7.05					
BOTTOM OF PROTECTIVE PIPE	3	.0	5.05				
BOREHOLE FILL MATERIALS: GROUT Type I Cement	TOP 0.0	BOTTOM 1.5	TOP 7.05	BOTTOM 5.55			
GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets				BOTTOM 4.05			
SAND 20/30 Silica, ASTM C775		BOTTOM 3.0	TOP 5.55	BOTTOM -12.95			
GRAVEL N/A	TOP 3.0	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 3.0	воттом 18.0	TOP 4.05	BOTTOM-10.95			
PIEZOMETER TIP							
BOTTOM OF BOREHOLE 20.0 _12.95							
GWL AFTER INSTALLATION	5.9			0.75			
AS THE PIEZOMETER FLUSHED A AS A SENSITIVITY TEST PERFOR WARKS Well developed an Water changed from grey si with coupling necessary on	MED ON THE PIE d grouted 6/1/90 lty to clear san	ZOMETER? . Water removed d free. Develop	ment complete a	y pump, 20 gallons t 14:45; extensio			
with coupling necessary on riser pipe and protective pipe to reach 3'. Pump was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.							



Key West Remedial INSTALLED BY G.StephensDATE 5/30/90 PROJECT NO. 595392 CHECKED BY M. HamptonDATE 9/21/90 BORING NO. MW7-4





PROJECT NUMBER: 595392	<u> </u>	<u>17854</u>	12 74 Size 9					
BORING NUMBER: MW 7-5	COORDINATES: NA				DATE: 5/30/95			
ELEVATION: 9,12	GWL: Depth 5/3/11 Date/T							
ENGINEER/GEOLOGIST: 3, 54-	Depth W/A Date/T	ime //	<u>/</u> 4	 -	TE COMPLETE			
DRILLING METHODS: Hollow Stem Auger/Split Spean PAGE / OF 1								
DEPTH (1/2,) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6 11) RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	Time	Marks Organ (C V30000(20m)		
N/A 7 N-0-1'-	Top Soil	PT						
	Trushed Limestone fill w/some silt	I M ≠	100	المن المناس	17:30	/ -		
8 Crus	hed Limestone Fill	1						
2-4 11 25	some Sit +	5				/ -		
L - 10 Crus	hed Limestone Fill							
	ome b'-saturated					/ 7		
10 Crus	hed Limestone fin			*		_		
4 2	ome Sit		4			<i>i</i> –		
				<u> </u>				
- 20 ω/ so	hed Limestone fill me Sut and Shell fragments				17:45	2		
	Light Limestone fil	7			Eurouse San to	, "		
15-17 24 15'	Dark, solltic		* * *		() () () () () () () ()			
8 3111	w/ooll-es, where			1	Burron D Sampling Eliming Eliming			
End	of Boring				18:30	;		
NOTES:	1/	, R.	n +		e pelic	+ <		
Drilling Contractor Drilling Oc	olution Note:				•	<i>:</i>		
Drilling Equipment For 3 F 70					d allou	iea		
Driller: Dick and		TO	hydr	77/	<u>-</u>			
Decon: Auser Steam cleaned on Visquine, Spoons washed								
Contaminated Material placed in labeled 55gg, or im								

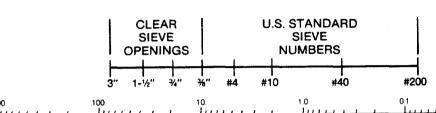
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0-4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.0001



GRAIN SIZE IN MM

COBBLES	GRAV	'EL	SAND			SILT AND CLAY	
	COARSE	FINE	COARSE	MEDIUM	FINE	5.2.7,11.5 52.11	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES		
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES		
GRAVELS WITH F!NES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES		
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES		
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES		
	SC	CLAYEY SANDS, SAND—CLAY MIXTURES		

FINE-GRAINED/HIGHLY ORGANIC SOILS

0.01

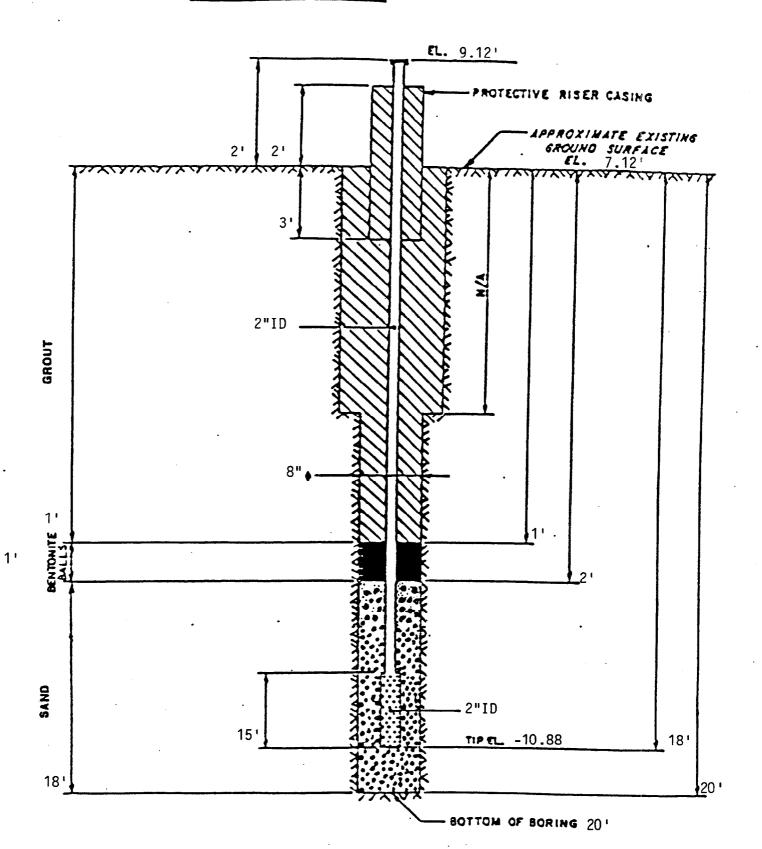
FINE-GRAINED/HIGHET ONGANIO SOILS						
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY				
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS				
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY				
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS				
	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS				
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS				
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS				



PROJECT NAME Key West Remed	ial Investigatio	nFIELD ENG./GEO.	G. Stephens	DATE 5/30/90			
BORING NO. MILT E	PRCJECT NO. 595392 BORING NO. MW7-5			DATE_9/21/90			
19W7-5		DATE OF INSTALL	ATION	5/30/90			
BOREHOLE DRILLING		·					
DRILLING METHOD Hollow S	tem Auger	TYPE OF BIT	Rock Bit				
DRILLING FLUID (S) USED:			USED: N,	/A			
FLUIDFROM	ТО	•	FROM	I			
FLUID FROM		SIZE	FROM	_то			
DESCRIPTION	·						
TYPE Sch. 40 PVC ASTM F4	80 and D170	RISER PIPE MAT	ERIAL Sch. 40 P	VC ASTM EARO			
DIAMETER OF PERFORATED S		RISER PIPE DIAM	METERS:	and D170			
PERFORATION TYPE:			N/A 1. D				
SLOTS HOLES	SCREEN X		SECTIONS				
AVERAGE SIZE OF PERFORAT		1	Flush threaded				
TOTAL PERFORATED AREA	15'	<u>rings</u> to seal					
PROTECTION SYSTEM							
RISER PROTECTIVE PIPE LEN	GTH5'	OTHER PROTECT	ION Locking rise	er cap.			
PROTECTIVE PIPE O.D.		1	2'X2'X6" meets				
	DISTANCE AS	OVE/BELOW					
ITEM		RFACE (Ft.) ELEVATION (MSL)					
TOP OF RISER PIPE	2	.0		9.12			
GROUND SURFACE	0.	.0	7.12				
BOTTOM OF PROTECTIVE PIPE	3	.0		4.12			
BOREHOLE FILL MATERIALS:	·						
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1.0	TOP 7.12	BOTTOM 6.12			
BENTONITE 3/8" Pellets	TOP 1.0	BOTTOM 2.0	TOP 6.12	BOTTOM 5.12			
SAND 20/30 Silica,	TOP 2.0	BOTTOM 20.0	TOP 5.12	BOTTOM -12.88			
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 3.0	воттом 18.0	TOP 4.12	BOTTOM -10.88			
PIEZOMETER TIP							
BOTTOM OF BOREHOLE	20.0	,	-12.88				
GWL AFTER INSTALLATION 5.2 2.9							
AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO X							
WARKS Wells developed and grouted 6/1/90. Water removed by centrifugal pump, approxi-							
mately 25 gallons. Change in water from silty black to clear sand free. Development completed 15:45, coupling with extension added to riser and protective pipe. Pump used was							
a 5 Hp Briggs and Stratton,			p. 0.0000 p.p0	rump useu was			



PROJECT NAME | Key West Remedial | Investigation | INSTALLED BY G.StephensDATE | 5/30/90 |
PROJECT NO. | 595392 | CHECKED BY M.Hampton DATE | 9/21/90 |
BORING NO. | MW7-5





PROJ	ECT NUM	ивек: Е	795	392	PROJECT NAME: *(ou west	Ren	ica la	/		1 - S
BORIN	IG NUM	BER: וא	W		COORDINATES: //	A	DA	DATE: 5730,90			
ELEVA			7. , <u>5</u>	-	GWL: Depth 3' 3"	Date/Time	7 DA	TE STARTED:	7/30/90		
ENGIN	NEER/GE	OLOGIS	ک :T	Stephe.s	Depth N/A	Date/Time	\rightarrow	TE COMPLETED:			
DRILL	ING MET	HODS:	401	10W Stem A	luger/Split	<u> </u>			PA	GE /	OF /
рертн (<i>Ұ</i> Ұ,)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMA Time	aks Organie Va <i>p</i> ors/or
1 1 1 9 1 1 1 6	N/A	5 10 89	N/2	0-1' - To 1'-2'- Dry Lime	Crushed stone		PT 	1/3	7/2		1 =
1 1 1 T		63 06		2'-3'-Wat.	er Table	ecl				19:47	
	:	97.00		Satu	irated cru	shed					
- - 8 - - 8 - و	; ; ;	وراواو			sorted sand stone Ooli						
<u>8-10</u>		72-		511ty Weil 5	Limestone onted	C				20100	8 -
	(a, 1) Parina (i) (a) 6 (ii) (a) (iii) (ii	542 57	Y	ŕ	inated crus					Burnougo down tox LD Tox	30
 				(Shut acc Reinleye	24 Puc Rise					21:00- 21:30	-
				Ena c	of Boring					22;15	_
Drilling Drilling Drilling	g Contrac g Equipm	nent <u>F</u>	<u>(6,0</u> (2,	F-700 m	to to	J.5. P	40	od spec	1000	edde	
,	Me+	hod	04	Decon or A	iuser + Equip	pement;	STON	eam visgo	cle	aned Aug	jer s

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽⁷⁾
VERY LOOSE	0 - 4
LOO8E	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

					ĺ				RI	ECO	RDE	D F	OF THE FINAL TWO INTERVAL. THE
	CLEAI SIEVE OPENIN	: / <i>/</i>		STAN SIEVI NUMBE	Εĺ	RD ,			Ti	4E S	TAN	IDA	RD PENETRATION RESISTANCE.
1000 10	•	 34" 3%" 10.	#4 #10	1.0	#4	0		#200 0.1 1			, (2.01 LLL	0.0001 0.0001
				GI	MAIN	SIZ	€ IN MI	м			7		
-	GRAV	/EL		ļs	SAND] '		1		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDI	ŲМ	Λ	FINE	7		$\overline{7}$	1	_	
-			USC	S CLA	SIF	icy.	ION FO	s/Ac	OILS		J	\smile	,

COARSE-GRAINED SOILS

COARSE-GRAINED SOILS									
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES							
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES							
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES							
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES							
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES							
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES							
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES							
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES							

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

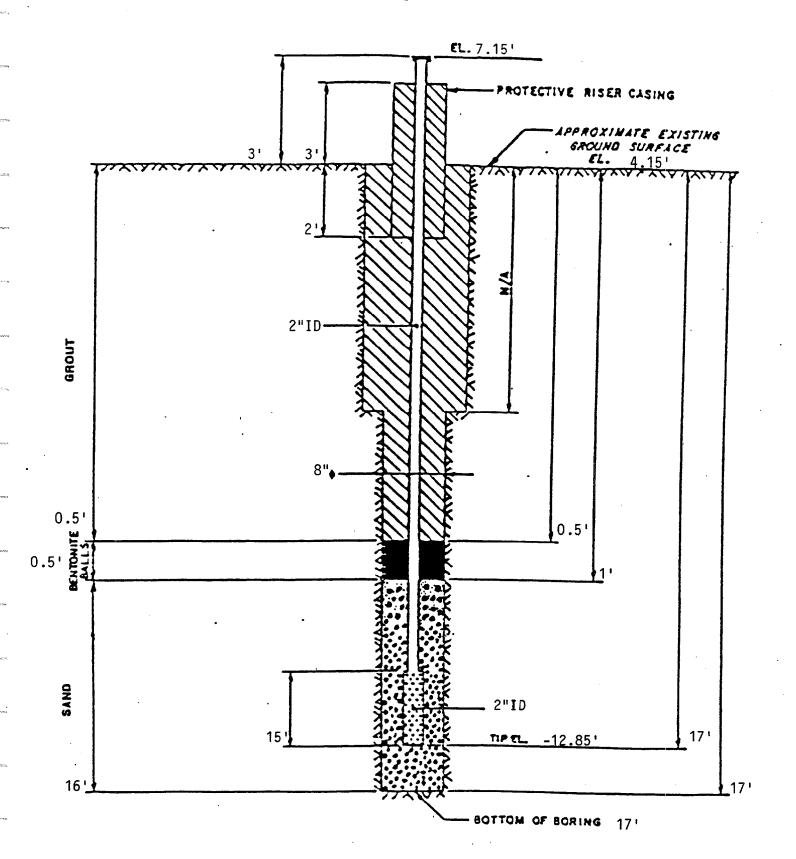


PROJECT NAME Key West Remed	ial Investigation	nFIELD ENG./GEO.					
PRCJECT NO. 595392 BORING NO. MW7-6		CHECKED BI _M.	Hampton	DATE 9/21/90			
		DATE OF INSTALL	ATION	5/31/90			
BOREHOLE DRILLING							
DRILLING METHOD Hollow S	tem Auger	TYPE OF BIT	Rock Bit				
DRILLING FLUID (S) USED:			USED: N/A				
FLUIDFROM	TO	1	FROM	1			
FLUIDFROM			FROM				
DESCRIPTION							
TYPE Sch. 40 PVC ASTM F48	0 and D170	RISER PIPE MAT	ERIAL Sch AC	PVC ASTM F480			
DIAMETER OF PERFORATED SE			METERS:				
PERFORATION TYPE:		i	<u>/A</u> 1. [
SLOTS HOLES	SCREEN X	LENGTH OF PIPE					
AVERAGE SIZE OF PERFORATION		JOINING METHOD					
TOTAL PERFORATED AREA	<u> </u>	rings to seal joints.					
RISER PROTECTIVE PIPE LENG		OTHER PROTECTION Locking riser cap, Concrete pad 2'X2'X6" meets ASTM C150					
ITEM	DISTANCE AB	OVE/BELOW ELEVATION RFACE (Ft.) (MSL)					
TOP OF RISER PIPE		.0	7,15				
GROUND SURFACE	0.	.0	4.15				
BOTTOM OF PROTECTIVE PIPE	2	.0		2.15			
BOREHOLE FILL MATERIALS: Type I Cement ASTM C150	TOP 0.0	воттом 0.5	TOP 4.15	BOTTOM 3.65			
BENTONITE 3/8" Pellets	TOP 0.5	BOTTOM 1.0	TOP 3.65	BOTTOM 3.15			
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 17.0	TOP 3.15	BOTTOM -12.85			
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 2.0	BOTTOM 17.0	TOP 2.15	BOTTOM _12.85			
PIEZOMETER TIP							
BOTTOM OF BOREHOLE	17.0	-12.85					
GWL AFTER INSTALLATION	3.25	<u> </u>		0.90			
S THE PIEZOMETER FLUSHED AF		•		X			



MONITOR WELL INSTALLATION SKETCH Key West Remedial

PROJECT NAME Investigation INSTALLED BYG Stephens DATE 5/31/90
PROJECT NO. 595392 CHECKED BY M.Hampton DATE 9/21/90
BORING NO. MW7-6



Site 8 Fleming Key South Landfill

Well Construction Details
Fleming Key
South Landfill
Site 8
NAS Key West
Key West, Florida

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (ft)MSL	GROUND SURFACE ELEVATION (ft)MSL	TOTAL WELL DEPTH (ft)	LENGTH OF SCREEN (ft)	SCREENED INTERVAL ELEVATION (ft) MSL	 SLOT SIZE (inches)	THICKNESS OF SAND PACK (feet)	THICKNESS OF BENTONITE SEAL (feet)	THICKNESS OF GROUT COLUMN (feet)
MW 8-1	05/30/90	13.56	10.56	18.0	15	7.56 TO -7.44	0.010	18.0	1.0	1.0
MW 8-2	05/31/90	5.64	2.64	17.0	15	0.64 TO -14.36	0.010	 19.0	0.5	0.5
MW 8-3	 05/31/90	10.72		18.5	14	3.22 то -10.78	0.010	 17.0	0.5	2.5
MW 8-4	06/11/90	12.50	9.50	25.0	20	4.50 TO -15.50	0.010	l 22.0	1.5	1.5
MW 8-5	06/11/90	9.05	6.05	18.5	15	3.05 TO -12.45	0.010	 17.5	0.5	2.0
MW 8-6	06/11/90	9.36	6.36	18.0	15	3.36 TO -11.64	0.010	 18.0	1.0	1.0
MW-16R	 	8.09	 5.09 	18.0	15	 2.09 TO -12.91	 0.010	 18.0 	 1.0 	 1.0

Friedrick Control of C



PROJECT NUMBER: 595392	emedi	ialIn	uesticatio	11.5ine=8	
BORING NUMBER: MW 8-1	COORDINATES: V/A		DATE: 5/30/90		
ELEVATION: 9,4	GWL: Depth 5,5" Date/Time	-16:05 D	DATE STARTED: 5/30,90		
ENGINEER/GEOLOGIST: K. Donsey	Depth N/A Date/Time	N/A		ATE COMPLETE	
DRILLING METHODS: HOllow Stern Au	ger / Sp/it Spoon		P.	AGE -/	of L
DEPTH (\$\frac{4}{7}\) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (\$\frac{6}{7}\) RECOVERY ()	DESCRIPTION	USCS SYMBOL MEASURED	CONSISTENCY (TSF) WELL		MARKS Organic Vaper(spm)
1 1 1 9 1 1	one fill, ary to sand size	<i>M M</i>	//	16:05	
2-4 3 Limes = 3	me Fill, Sry				
Plastic 2 2 Wet@s 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	one Fill + metal of, black liquid				4110 ppm =
3 20 2 2 2 2 2 2 3 30000 7	To Pty				-
L] 4 Limest	one fill to sand size t glass odor, black liquid				-
1 1 1 / 1 1	one fill to sand size odor, black liquid				
3	empty			<u> </u>	
Product V	odor	Y			
NOTES: Drilling Contractor Dr. 111,5 Solution Drilling Equipment Ford F-760 M To. Driller: Kevin + Alex		90		ite pell and and ate	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

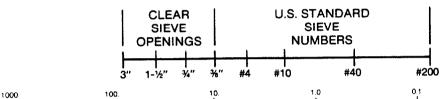
DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾		
VERY LOOSE	0 - 4		
LOOSE	5 - 10		
MEDIUM DENSE	11 - 30		
DENSE	31 - 50		
VERY DENSE	OVER 50		

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

SILT AND CLAY

0.001

0 0001



GRAIN SIZE IN MM

 COBBLES
 GRAVEL
 SAND

 COARSE
 FINE
 COARSE
 MEDIUM
 FINE

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SANDCLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	РТ	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



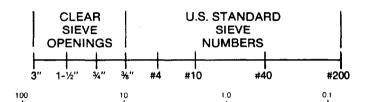
PROJE	CT NUN	1BER:	595	392	PROJECT NAME	Keuwest R	Ear.	aug I T	ی م ر	Hicoxion.	-S, 50 - 8 3	
PROJECT NUMBER: 595392 BORING NUMBER: MW8-1									DA	DATE: 5/30/90		
ELEVA"		9,4			GWL: Depth 5,	5 Date/Time	e <i>5/3</i> 0,	190/12:05	DA	DATE STARTED: 5/30/90		
						Depth N/A Date/Time N/A				DATE COMPLETED: (ರ್ಶ)ತ್ರಿಳು		
DRILLING METHODS: Hollow Stem Auger, Split Spoon									PA	GE 🚓	OF	
DЕРТН (₹ħ.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (b ")	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	rem Time	ARKS Organic Vapodopm)	
┡ ┤	NA	1	NA	14'- 15'5" - LIr	mes tone f	ill, gravelsiz	N/A	MA	MA		3.0ppm	
14-16		2		55"-16'- Lim	emud gr	ay/white	<u> </u>				OND	
		- न य स - स फे		Limestor Glass Product & Limestor Little li	one fill o odor ne fill	and mud					- - -	
18-20		4					†					
 20-2 <u>३</u>		7 7 7		Limesto Glass			, , , , , , , , , , , , , , , , , , ,			***	 	
LJ	35F 1 E.P. TOX	5 5 5 5 5		221-23'- Li 23-23'- Cop 23-24- Lim	mestone ass frag prox. livid affill + bas he rock, u	Fills ments c between chite	:			16:45	0.0 3.0 - ppm -	
2420		5 5 5			rock, wh							
				End of	Boring			The state of the s				
											<u> </u>	
Drilling	Contra	nent <u>Fo</u>	rd	ing Soluti F-700 Mab Kief	on He Drill		-1-	lued	11	e Leken nd diss nate		

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾		
VERY LOOSE	0 - 4		
LOOSE	5 - 10		
MEDIUM DENSE	11 - 30		
DENSE	31 - 50		
VERY DENSE	OVER 50		

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



GRAIN SIZE IN MM

0.001

0.0001

	GRAV	/EL	SAND .			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS	
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	



MONITOR WELL INSTALLATION SHEET

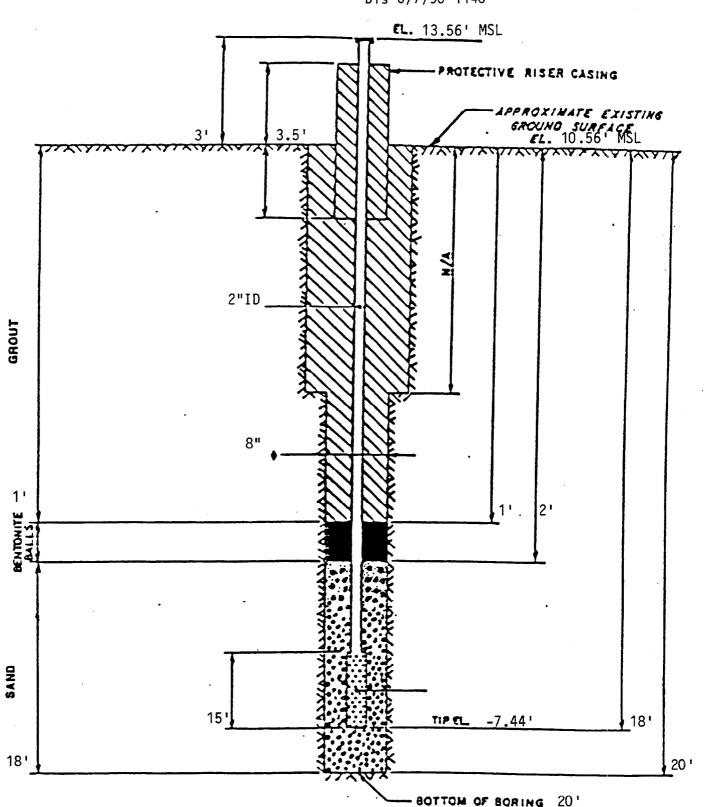
PROJECT NAME Key West Remedi	ial Investigation	FIELD ENG./GEO	K. Dorsev	DATE 5/30/90			
PRCJECT NO. 595392		CHECKED BY_M	Hampton	DATE 9/20/90			
BORING NO. MW8-1		DATE OF INSTALL					
BOREHOLE DRILLING							
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT	Rock Rit				
DRILLING FLUID (S) USED:			USED: N	/A			
FLUID FROM	то		FROM	1			
FLUIDFROM		SIZE	FROM	- 10			
DESCRIPTION	· · · · · · · · · · · · · · · · · · ·						
TYPE C. AO DUC ACTM I	7400 and D170	CICCO DIOS ILLE					
TYPE Sch. 40 PVC ASTM F			ERIAL Sch. 40 P				
PERFORATION TYPE:	ECTION	1	METERS:	The state of the s			
SLOTS HOLES	concen [V]	1	A1. D				
			SECTIONS				
AVERAGE SIZE OF PERFORATION TOTAL PERFORATED AREA		i	<u>Flush threaded</u>	d with "O"			
TOTAL PERFORATED AREA	13	rings to seal	101nts.				
PROTECTION SYSTEM							
RISER PROTECTIVE PIPE LENG	STH 5'	OTHER PROTECT	ION Locking Ri	ser Cap.			
PROTECTIVE PIPE O.D. 3	3/4'	<u>Concrete Pad 2</u>	'X2'X6" meets A	STM C150			
	DISTANCE AB	OVE /BELOW	E. S.	(A.T.)			
ITEM	GROUND SUI	OVE/BELOW ELEVATION RFACE (Ft.) (MSL)					
TOP OF RISER PIPE	3.	0	13.56				
GROUND SURFACE	0.	0	10.56				
BOTTOM OF PROTECTIVE PIPE	-1.	5	9.06				
BOREHOLE FILL MATERIALS:							
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1.0	TOP 10.56	воттом 9.56			
BENTONITE 3/8" Pellets	TOP 1.0	BOTTOM 2.0	TOP 9.56	BOTTOM 8.56			
SAND 20/30 Silica, ASTM C775	TOP 2.0	BOTTOM 20.0	TOP 8.56	BOTTOM _9.44			
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 3.0	BOTTOM 18.0	TOP 7.56	BOTTOM _7.44			
PIEZOMETER TIP							
BOTTOM OF BOREHOLE	20.0)	-9.44				
GWL AFTER INSTALLATION 10.0 0.56							
S THE PIEZOMETER FLUSHED AFTER INSTALLATION? AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? WARKS Well developed and grouted 6/22/90. Tape measure deconed before and after use, 2'X2'X6" thick pad installed. Produced clear sand free water after pumping 15 gallons. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.							



MONITOR WELL INSTALLATION SKETCH

Rey West Remedial
PROJECT NAME Investigation
PROJECT NO. 595392
BORING NO. MW8-1

INSTALLED BY K. Dorsey DATE 5/30/90 CHECKED BY M. Hampton DATE 9/20/90 Added 2½" screen 6/7/90 W.T.~10'Bls 6/7/90 1140





PROJE	CT NU	MBER: 5	95	292	PROJECT NAME: Pe	ullesi Re	ر حرز در ح	dial ?	M . J 42	ලද ගන්නෙන	C 22# 7		
		BER: M			PROJECT NAME: Key West Remedial In					DATE: 5/3//90			
	TION:		~ 3	<u> </u>	GWL: Depth 5" Date/Time 5/3//90-15:10					DATE STARTED: 5/3:,90			
ENGIN	EER/GE	OLOGIS	T: V	Docsey	Depth N/A	Date/Time		90210.70 1774	DA	TE COMPLETE) /3:/ ⁴⁰		
ENGINEER/GEOLOGIST: K. Dorsey DRILLING METHODS: Hollow Ster					Auger/Split			7 / M	PA	GF :	OF 2		
				170W O 1C711	705C1 / 0P//	$\circ \mu c c n$		 _		<u> </u>			
БЕРТН (Ғ₁,)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	,	ARKS Organie		
		11		1			ļ <u> </u>	<u> </u>	0	Time	Vaporgam)		
 - 2 -		9 % 5	A C	1, TIMEZION	ne fill, gra		→	NA	AAA	15 00	2 ppm =		
 		N.97.0		Gravel -	ne fill, gro o sand siz	≈ ૯							
4-6		11 15 11 8		5' 5.5' Appa	stone fill, correct water and, satur	level							
6-8		7707		Lime nu	ud, Caturat	ed					-		
 - 8-/0		91+44		Lime "	ud, satura	ited					-		
 /-)		5765		Limen	rod, Scitore	ared							
 12-14		4 8 80		Lime m	ad, sat r	ated					- -		
		97					\vee						
Drilling	g Contra	ctor D	rd	ling Solv F-700 Mok lex	rion Drill		a de		and	e peller d allow e			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

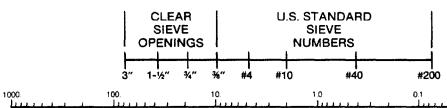
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	/EL		SAND		
COBBLES					· · · · · · · · · · · · · · · · · · ·	SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW-	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

211 = 2	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



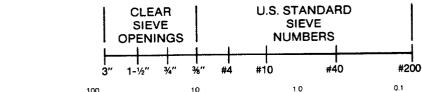
PROJE	CT NUM	1BER: ವ	953	392	PROJECT NAME: K	euwest t	Ren	cdial	In	restinati.	n. Dilet is		
BORIN	G NUME	BER: m	W 8	- ユ	COORDINATES: N	/A			DA	DATE: 90			
ELEVATION: 5.64 ENGINEER/GEOLOGIST: K. Dorsey					GWL: Depth 5,5			1/90-15;	_		5/3//90		
	NG MET		T: K,		Depth N/A	Date/Time	~/	<i>[</i> A	PA	TE COMPLETED	0: 5/3//93 OF 2		
DNILL	NG ME	HODG.	Lui S	Astronomical	· Acres 15								
DЕРТН (^{((()} ()	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REM	ARKS Organis Organis		
<u>μ</u> Ηφ	N/A	0.70	414	Limen	rud, Satura	nred	14/2	4]4	12/21				
 8-علا		せててい		Gravel	To mud	,				15:10	_		
	ESX WISE	0+9.0		18-20'- Win						15:35	2.5 ppm]		
-				END	of BORIN	G -					-		
NOTE Drillin Drillen	g Contra g Equipn	ctor DI	rill ord	ing Solut F-700 Mick Alex	ions nule Drill	NOTE:	.10	enton aded	4,	pellet ad allow te	s ied		

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



000. 100. 10 10 0.1 0.01 0.001 0.0001

GRAIN SIZE IN MM

	GRA	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

THE GRANTED THE GITTE GOVE						
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY				
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS				
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY				
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS				
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS				
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS				
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS				



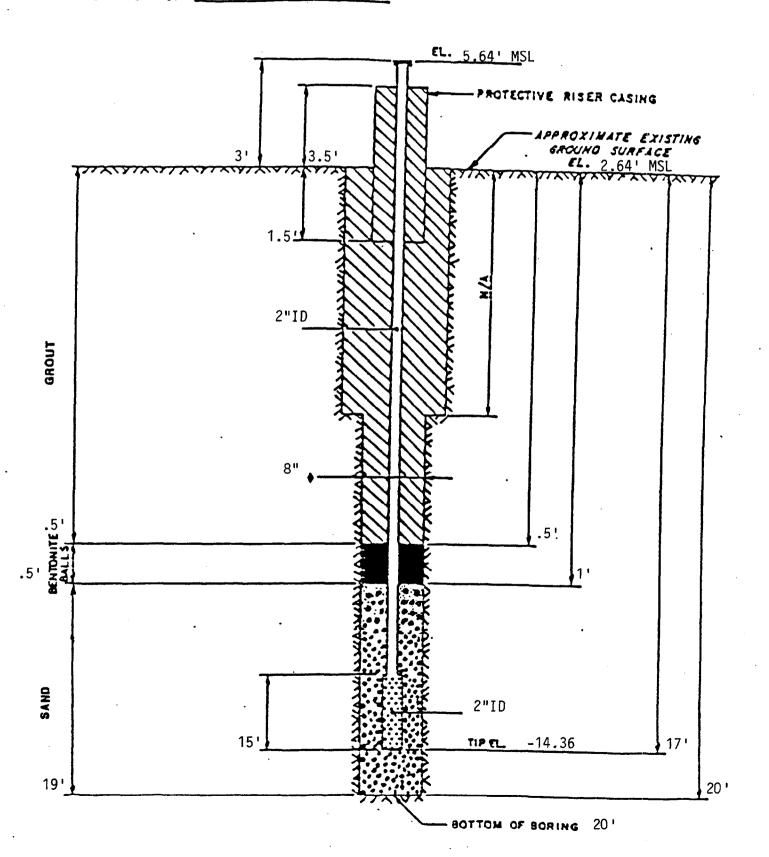
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remed	<u>ial Investigatio</u>	nFIELD ENG./GEO	K. Dorsey	DATE 6/11/90			
PRCJECT NC. 595392		CHECKED BY M	Hampton	DATE 9/20/90			
BORING NO. MW8-2		DATE OF INSTALI	LATION				
BOBENOLE DOLLLING				5/31/90			
BOREHOLE DRILLING							
DRILLING METHOD Hollow		TYPE OF BIT	Rock Bit				
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S	USED: N/	Ά			
FLUIDFROM	ТО	1	FROM	1			
FLUIDFROM		SIZE	FROM	то			
DESCRIPTION			•				
TYPE Sch. 40 PVC ASTM F48	30 and D170	RISER PIPE MAT	ERIAL Sch. 40	DVC ASTM FARO			
DIAMETER OF PERFORATED S		RISER PIPE DIA	METERS:	and D170			
PERFORATION TYPE:		i .	N/AI. D				
SLOTS HOLES	SCREEN X	1	SECTIONS				
AVERAGE SIZE OF PERFORATI		1					
TOTAL PERFORATED AREA		_rings to sea		·			
PROTECTION SYSTEM							
RISER PROTECTIVE PIPE LEN	GTH51	OTHER PROTECTION Locking Riser Cap,					
PROTECTIVE PIPE O.D.	3 3/4'	Concrete pad 2'X2'X6" meets ASTM C150					
	T DIGTINGS AS						
ITEM	DISTANCE AB GROUND SU	RFACE (Ft.)	ELEVATION (MSL)				
TOP OF RISER PIPE	 	3.0	5-64				
GROUND SURFACE	0.						
BOTTOM OF PROTECTIVE PIPE	1	.5	1.14				
BOREHOLE FILL MATERIALS:							
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 0.5	TOP 2.64	воттом 2.14			
BENTONITE 3/8" Pellets	TOP 0.5	BOTTOM 1.0	TOP 2.14	BOTTOM 1.64			
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 20.0	TOP 1.64	BOTTOM-17.36			
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 2.0	BOTTOM 17.0	TOP 0.64	BOTTOM-14.36			
PIEZOMETER TIP							
BOTTOM OF BOREHOLE	20.0		-17				
GWL AFTER INSTALLATION 2.0 0.64							
S THE PIEZOMETER FLUSHED AFTER INSTALLATION? AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? WARKS Well developed 6/22/90. Measuring tape deconed before and after use,							
2'X2'X6" pad installed. P	<u>roduced clean sa</u>	nd free water at	fter 25 gallons.	Pump used was			
a 5 HP Briggs and Stratton , flow rate of 1 to 2 gpm.							



MONITOR WELL INSTALLATION SKETCH

PROJECT NAME Investigation INSTALLED BY K. Dorsey DATE 5/31/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW8-2





PROJE	CT NUN	IBER: 5	95	392	PROJECT NAME:	W WY5- "	7.7	J. 11			11 Not 8		
		BER: / Y		8-3	COORDINATES:				DA		70		
		10,72			GWL: Depth 5 Date/Time 5/3//95-16//5 Depth Date/Time //					DATE STARTED: 5/3//5			
		OLOGIS		VV) 5+2 Aug	Depth Per / Sp/. + Sp		e // .	,	PAG		D ද <u>ි 3/ ව</u> ේ OF ධ		
		11000.7	IOIIC	two eyens rue	ET JULLIUS	00/1	T	T					
DEРТН (-∱ -} -)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ('',)	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	RE Time	MARKS Dingmilio Dingmilio		
 	N/A	50 6 G	AKI		lene fin je Pro Sanas	/	PT NA I	NA	NX	16:15	-		
-0-2-	- Children and the state of the	06499	·>		tone fill, c	,				a desired section	4PPm - CVA - Background		
-3-4 - 		- 20-70		Some							 		
6-8				Limesto Geovel	e 200, 200 								
 		5 3 7 3		Most,	e - III, we Sond Size					.			
10-12 10-12		2		Mostly a	ne fin we in a size and size								
ا المائة	e - a y - a companier co y manufe e companye	\$ - 3		Mcs+1/	ne +, wet no volume novel size						- -		
			V				Ÿ						
Drilling	Contract	nent Fa	rd-	F-700 mob	ile Drill		ado		ind	pellets Lallow			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

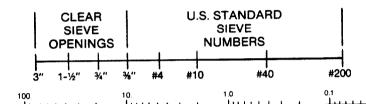
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

T	GRAVEL			SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	-

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000.

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

LHAF-CHIVIA		
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
,	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJE	CT NUM	IBER: 🟒	45	392	PROJECT NAME: K	equect Kei	$\gamma \in di$	al un	1254	1 777,011	17216	- [
BORIN	IG NUME	BER: 🚖	ر را - ا	g - 3	COORDINATES:				DA	DATE: 30 30			
ELEVA		101 43			GWL: Depth 5 5	Date/Time	5/3/	5/3//90-1675 DATE STARTED: 6/3/9)					
ENGIN	EER/GE	OLOGIS		Donsey	44								
DRILLI	NG MET	HODS:	Un //	ow Stem A	vaer /Soli	+ 5pcc					┪		
			1011	<u> </u>		<u> </u>	1					╡	
DЕРТН (57,)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ('\hat{\ell}'')	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)		Time	EMARKS Organic Vaporizoni		
H-16_	MA	2	NX	mostly =	e fill wer	en en gualantenten teme m	77 N/A	NA	N/A			-	
 - או-פיני - או-פיני	musf3	4 3 5 -		Limest. Gravel 181-19,51 Limes		wetgray				17:00	HPUD: DVA background.		
1x-30	TOX	iq		14,51-201-Lim	, m	····	1	<u> </u>				1	
				End of	portng							1	
- - -												1	
-											•		
-												4	
	:										•	_	
-												1	
_													
											· · · · · · · · · · · · · · · · · · ·	1	
Drilling	g Contrac g Equipm	etor D nent Fo	<u>rd</u>	ing Solut F-700 Mob lex	ion bile Drill	NOTE:	ac		ar	te pe nd allo			

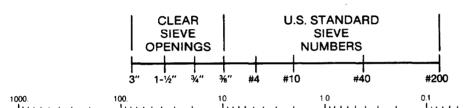
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(1)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.0001



GRAIN SIZE IN MM

	GRAVEL		SAND			SILT AND CLAY
COBBLES	COARSE	FINE COARSE MEDIUM		FINE	SILI AND CLAT	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	TIME-GRANTED/TRAITET ORGANIO GOLO							
	ML	INORGANIC SILTS AND VERY FINE SANDS; ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY						
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS						
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY						
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS						
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS						
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS						
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS						



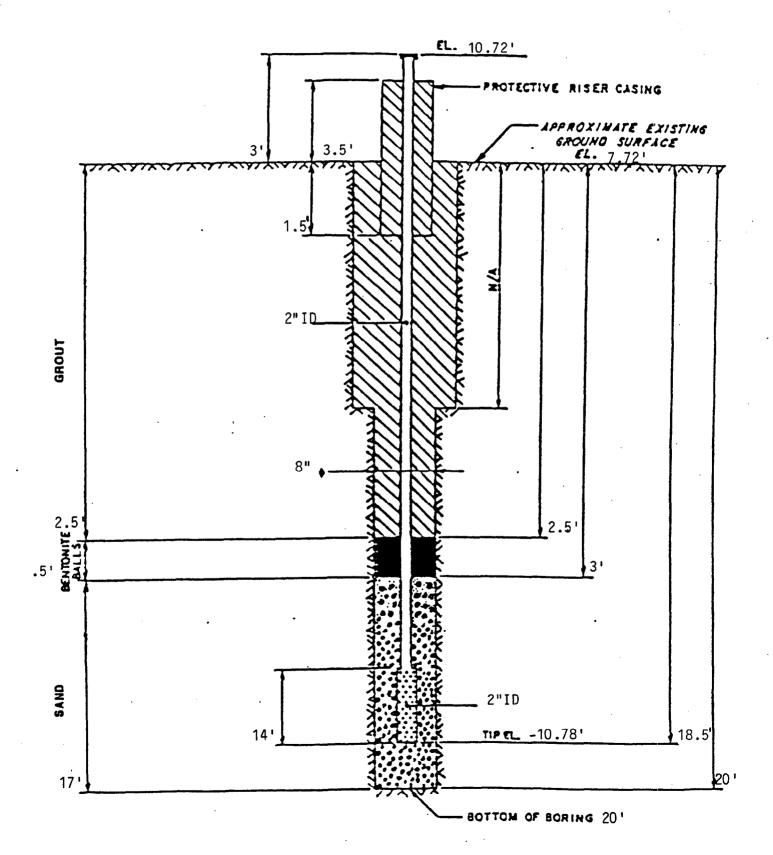
MONITOR WELL INSTALLATION SHEET

ROJECT NAME Key West Remedia	al Investigation	FIELD ENG./GEO	. <u>K. Dorsey</u>	DATE 5/31/90			
PRCJECT NO. 595392		CHECKED BY M.	Hampton	DATE 9/20/90			
BORING NO. MW8-3		DATE OF INSTALL					
BOREHOLE DRILLING							
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT	Rock Bit				
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S)					
FLUIDFROM	ТО		FROM	· ·			
FLUIDFROM		SIZE	FROM	то			
DESCRIPTION							
TYPE Sch. 40 PVC ASTM	F480 and D170	RISER PIPE MAT	ERIAL Sch.	40 PVC ASTM F480			
DIAMETER OF PERFORATED SE	CTION 2"	RISER PIPE DIAM		1 0 1 0 0			
PERFORATION TYPE:		0. DN	<u>'A</u>	. D2"			
SLOTS HOLES	SCREEN X	LENGTH OF PIPE	SECTIONS	9'			
AVERAGE SIZE OF PERFORATION	ONS010	JOINING METHOD	Flush_threa	ded with "O"			
TOTAL PERFORATED AREA	14'	_rings to seal	joints.				
PROTECTION SYSTEM							
RISER PROTECTIVE PIPE LENG	5TH5'	OTHER PROTECTION Locking Riser Cap.					
PROTECTIVE P:PE O.D.	3 3/4'	Concrete pad 2'X2'X6" meets ASTM C150					
ITEM	DISTANCE AB GROUND SU		EL	EVATION (MSL)			
TOP OF RISER PIPE	3.						
GROUND SURFACE	0.		7.72				
BOTTOM OF PROTECTIVE PIPE		.5 6.22					
BOREHOLE FILL MATERIALS:				1			
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 2.5	TOP 7.72	BOTTOM 5.22			
BENTONITE 3/8" Pellets	TOP 2.5	BOTTOM 3.0	TOP 5.22	BOTTOM 4.72			
SAND 20/30 Silica, ASTM C775	TOP 3.0	BOTTOM 20.0	TOP 4.72	воттом -12.28			
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 4.5	BOTTOM 18.5	TOP 3.22	BOTTOM -10.78			
PIEZOMETER TIP							
BOTTOM OF BOREHOLE	BOTTOM OF BOREHOLE 20.0 -12.28						
GWL AFTER INSTALLATION 7.0 .70 6/7/90							
S THE PIEZOMETER FLUSHED AFTER INSTALLATION? AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? Well developed 5/31/90 for 25 min, about 20 gallons till clear and sand free. 2'X2'X6" pad installed and measuring tape deconed before and after use. Pump used was a 5 HP Briggs and Stratton, flow rate of 1 to 2 gpm.							



MONITOR WELL INSTALLATION SKETCH Key West Remedial

Key West Remedial Investigation INSTALLED BY K. DorseyDATE 5/31/90 PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/10/90 BORING NO. MW8-3 W.L.~7' 6/7/90





PROJE	CT NUM	ط :BER	95		eni	edial_				8	
		BER: M	<u>۶ س</u>			<u> </u>		DATE: 6/1/90			
		12,5	, +. シ		6/1/0	<u>10 -10;2.</u> Io		DATE STARTED: 6/1/90 DATE COMPLETED: 6/1/90			
				Donsey Depth N/A Date/Time		<u> </u>	PA		OF 2		
		11000	<i>77 (2) (1</i>	owerent reper japin appe	1	r i			<u> </u>		
DЕРТН (齐≯)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (b, b, b)	RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	Tin	REMARKS Organ	20 1	
0-2	N/A	5690	\$	Limestone fill Gravel to sand size Dry	N/A	N/A	N/A	101	25 Oppr) =	
2-4		3 4 11 10	:	Limestone Fill Dry Asphalt, metal, plastic					:		
4-6		8 4 8 12		Limestone Fill Wood, plastic, glass Damio @ 5'		1			0,5pp	~ 	
6-8	:	14 20 16 14		Limestone fill Glass							
 		128		Limestone Fill Glass, metal wet@ 9.5'						-	
10-12		9599		Limestone fill Wet Glass			,			-	
D-14		5867		Limestone Fill Wet Limestone mud 12.5'-14'					lioppi	η <u>-</u>	
14-15		4	J				<u>/</u>				
Drillin	g Contra	nent <u>F</u>	ord	ling Solution NOTE F-700 Mobile Drill Hex		-	ar	nd a	pellets liowed e		

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

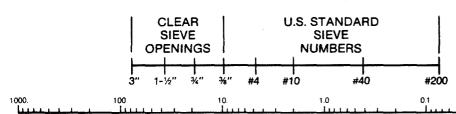
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

	T	
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



DDO 15	CT NI IN	IDED:	504	- 392	IPPO JECT NAME: Ua	1.125+	D			F			
					PROJECT NAME: Ke		<u> </u>	<u> </u>		TE: 6/1/9		8	
BORING NUMBER: MW8-4 ELEVATION: 12,5) - 7	GWL: Depth 5	Date/Time	ارارط	30-10:20		DATE STARTED: 6/1/90			
	EER/GE		رز :T:	Dorsey	Depth N/A	Date/Time				TE COMPLETE			
			, , , , , , , , , , , , , , , , , , , 		uger/Split		'-'/	/		GE 2	of 2		
DЕРТН (f f ∙.)		BLOWS ON SAMPLER PER (6 '')			DESCRIPTION		JSCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL	REN	MARKS Organ Va Sor	1.5	
14-16	N/A	1	NJA		one fill stone mud		NA	NA	NA	Time	Ppn	<u></u>	
10-18		12-1		Limes Wet	itone Fill I tomedium	n size			:		1 OVA		
		2272		Wet mud :	stone Fill 8,5' to 20'					·			
30-3 <u>7</u>		2 13 7 9		Wet Gravel	tone fill mixed w/r	nud		·				-	
 	· · · · · · · · · · · · · · · · · · ·	5 4 7 20	:	Wet Gravel	Hone fill mixed w/	mud						_	
211-36	mwsf 4 EP tox	30	>	Possi	stone fill bly rock 'tp 25' sal		\ \	——	√_	11100	lova	-	
				END 0	of BORING	3 -						-	
Drillin	Contrac	ent <u>Fo</u>	rd	ing Solu F-700 Mo lex	tion bile Drill	NOTE:	a	dde	d (te per and arr nate	liets Iowed		

	and the second s
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

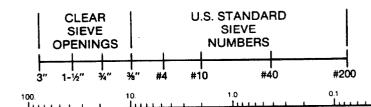
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	'EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS. SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

FINE-GRAINED/HIGHET ONGANIO SOILS						
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY				
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS				
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY				
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS				
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS				
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS				
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS				



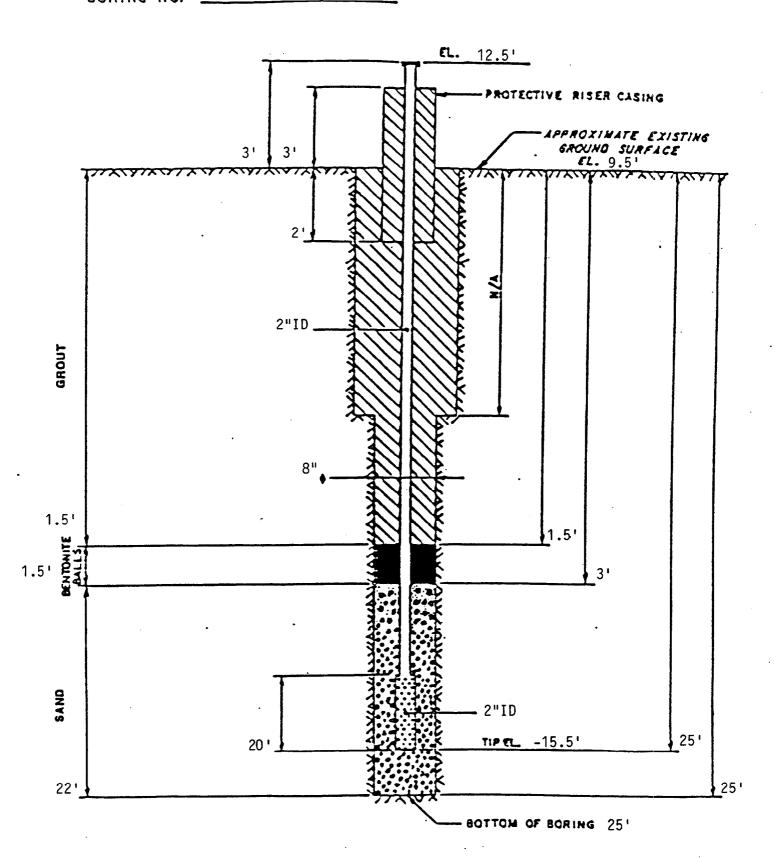
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remed	ial Investigatio	FIELD ENG./GEO	. K. Dorsey	DATE_ 6/21/90				
PRCJECT NC. 595392		CHECKED BY M.	Hampton	DATE 9/20/90				
BORING NO. MW8-4		DATE OF INSTALL	DATE OF INSTALLATION6/11/90					
BOREHOLE DRILLING								
DRILLING METHOD Hollow S	tem Auger	TYPE OF BIT	Rock Bit					
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S)	CASING SIZE (S) USED: N/A					
FLUIDFROM	то	SIZE	FROM	то .				
FLUIDFROM	то	SIZE	FROM	то				
DESCRIPTION			•					
TYPE Sch. 40 PVC ASTM F4	80 and D170	RISER PIPE MAT	ERIAL Sch. 40	PVC ASTM F480				
DIAMETER OF PERFORATED S	ECTION 2"	RISER PIPE DIA						
PERFORATION TYPE:			<u>'A1.</u>	1				
SLOTS HOLES	SCREEN X	LENGTH OF PIPE	SECTIONS	8'				
AVERAGE SIZE OF PERFORATI	ons	JOINING METHO	Flush threade	ed with "O"				
TOTAL PERFORATED AREA	20 '	<u>_rings_to_seal</u>	joints.					
PROTECTION SYSTEM								
RISER PROTECTIVE PIPE LEN	GTH <u>51</u>	OTHER PROTECT	OTHER PROTECTION Locking Riser Cap.					
PROTECTIVE PIPE O.D.	3 3/4'	Concrete Pad 2'X2'X6" meets ASTM C150						
ITEM		OVE/BELOW RFACE (Ft.)		VATION MSD				
TOP OF RISER PIPE	3.	0	12.					
GROUND SURFACE	0.	.0						
BOTTOM OF PROTECTIVE PIPE	2	.0	7.	50 .				
BOREHOLE FILL MATERIALS:		,						
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1.5	TOP 9.50	BOTTOM 8.00				
BENTONITE 3/8" Pellets	TOP 1.5	BOTTOM 3.0	TOP 8.00	BOTTOM 6.50				
SAND 20/30 Silica, ASTM C775	TOP 3.0	BOTTOM 25.0	TOP 6.50	BOTTOM- 15.50				
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A				
PERFORATED SECTION	TOP 5.0	BOTTOM 25.0	TOP 4.50	BOTTOM- 15.50				
PIEZOMETER TIP								
BOTTOM OF BOREHOLE	25.0	-15.50						
GWL AFTER INSTALLATION	5.66		3.	.84				
S THE PIEZOMETER FLUSHED A AS A SENSITIVITY TEST PERFOR MARKS Grouted and developed changed from dark black to	MED ON THE PIEZ 1 6/22/90 pumped 5 clear silt free	YOMETER? via centrifugal e after pumping;	pump approxima well developed	X DX tely 30 gallons slowly. Pump				
used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.								



MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BYK.Dorsey DATE 6/21/90
PROJECT NO. 595392 CHECKED BY M.Hampton DATE 9/20/90
BORING NO. MW8-4





PROJECT NUMBER: 595392	PROJECT NAME: Keywest Kemesist Investigation - Site				N-Site 6	
BORING NUMBER: MW 8-5	COORDINATES:			DATE: 6/1/90		
ELEVATION: 9,05 ft, MISL	GWL: Depth 4/2 " Date/1	ime 6/1/90		DATE STARTED:	6/1/90	
ENGINEER/GEOLOGIST: K. Dorsey	Depth کمرینز Date/1	Time 🔭 🔑	4	DATE COMPLETE	D:6///90	
DRILLING METHODS: Hollow Stem Ave	er/Split Spoon			PAGE	OF 2	
DEPTH (\$\frac{4}{7}\) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (\$\beta\$'') RECOVERY (\$\left(1)\)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF) WELL	CONSTRUCTION	MARKS Organic Vaperijan	
0-2 13 Tan 2000 -	sand cize	N/A	N/A N	13:05	2.000A	
Gravel to Gravel to July 19 Limeston Limeston	e fld were survey were					
Limestone 3 Cravel -0 3 Limestone Gravel -1 3 Limestone Limestone	Sana Cize Fill Cana Cize wet				2000 -	
NOTES: Drilling Contractor Drilling Soluti Drilling Equipment Ford F-700 mobile Driller: Kevin + Alex		USe		re pellet nd allowe rate		

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

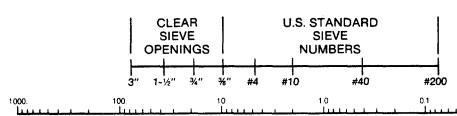
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DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	EL		SAND		SILT AND CLAY				
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	GILI AND CLAT				

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SANDCLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJE	CT NUM	BER: 5	95.	392	PROJECT NAME: /	euliest	ر ج پا	14,			on - 0 😘 🔧	
BORIN	G NUME	BER: 🕎			COORDINATES:	<u> </u>			DA.	DATE:		
ELEAN.		9.	05 9	t. MISL				*************************************		DATE STARTED:		
ENGIN	EER/GE	OLOGIS	<u>τ: Κ.</u>	Dorsey	Depth	Date/Time	$\frac{N}{2}$	ان بر/	PAG			
DRILLI	NG MET	HODS:	HO1.	low Stem	Auger/Split	Spoch			PA	GE 💪	OF J	
О ЕР ТН ()	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ()	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REF	MARKS Drog Name Carlo	
<u>i4-llq</u>		12			sand Size		MA	N/A	~/4		_	
16-18		25 194		G	mestone fill ravel to so litic Lime	and wet						
 	musf 5 EP Tox	11 14 11 10	\\	_	Limestone .1 clze	Manual Manual Andrews and Andrews	V	· ·	 -\	13:40	2 OVA -	
Drillin Drillen	g Contra g Equipr	nent F^{0}	rill) ird + /	ng Soluti F-700 Mobi Liex	ens le Drill	NOTE:	a.	ente naec naec	- 1	-e, pel 10 1/6 170	ets et	

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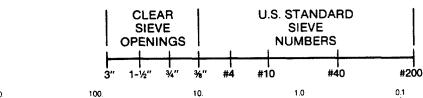
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

	,
DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(") STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES **USING A 140-POUND HAMMER FALLING FREELY** THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE **SUMMATION OF THE FINAL TWO INTERVALS IS** THE STANDARD PENETRATION RESISTANCE.



0.01 0.001 10. Li 1000 100. **GRAIN SIZE IN MM**

COBBLES	GRAV	/EL	SAND			SILT AND CLAY				
	COARSE	FINE	COARSE	MEDIUM	FINE					

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH FINES	GΜ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

		SHET CHARTO SOILS
	ML	INORGANIC SILTS AND VERY FINE SANDS. ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



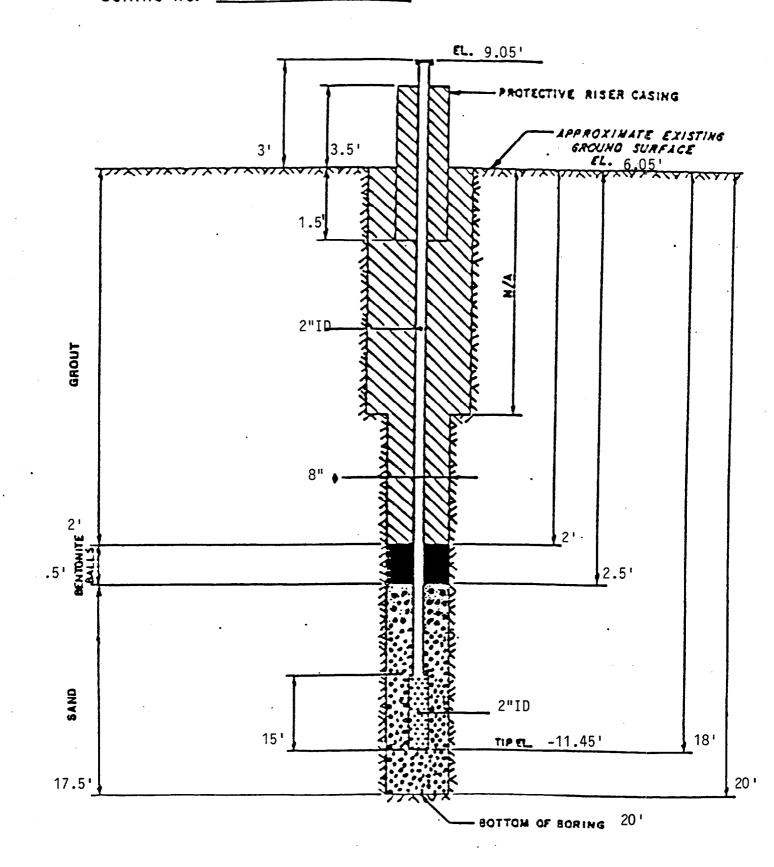
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedi	ial Investigation	FIELD ENG./GEO	K. Dorsey	_ DATE _6/11/90			
PRCJECT NC. 595392		CHECKED BY	M. Hampton	DATE 7/20/90			
BORING NO. MW8-5		DATE OF INSTALL	_ATION	<u>6/</u> 11/90			
BOREHOLE DRILLING							
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT_	Rock Bit				
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S)	USED:	N/A			
FLUID FROM	ТО	SIZE	FROM	ТО			
FLUID FROM		SIZE		то			
DESCRIPTION							
TYPE Sch. 40 PVC ASTM F48	30 and D170	RISER PIPE MAT	ERIAL Sch. 40	PVC ASTM F480			
DIAMETER OF PERFORATED SE		RISER PIPE DIA		and D170			
PERFORATION TYPE:		1	<u>'A</u> 1. D	2"			
SLOTS HOLES	SCREEN X		SECTIONS				
AVERAGE SIZE OF PERFORATI	_		•				
TOTAL PERFORATED AREA		JOINING METHOD Flush threaded with "0" rings to seal joints.					
PROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D3			FION Locking 2'X2'X6" meets				
ITEM	DISTANCE AE GROUND SU	OVE/BELOW RFACE (Ft.)		VATION MSL)			
TOP OF RISER PIPE		.0		9.05			
GROUND SURFACE	0.	,0		6.05			
BOTTOM OF PROTECTIVE PIPE	1	.5	4.55				
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 2.0	TOP 6.05	BOTTOM 4.05			
BENTONITE 3/8" Pellets	TOP 2.0	BOTTOM 2.5	TOP 4.05	BOTTOM 3.55			
SAND 20/30 Silica, ASTM C775	TOP 2.5	BOTTOM 20.0	TOP 3.55	BOTTOM _13.95			
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 3.0	BOTTOM 18.5	TOP 3.05	BOTTOM-11.95			
PIEZOMETER TIP							
BOTTOM OF BOREHOLE	20.0			-13.95			
GWL AFTER INSTALLATION	8.66			-2.61			
WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? REMARKS Well developed and grouted 6/22/90. Pumped 15 gallons by centrifugal pump. Color changed from silty grey to sand free clear. Pump used was a 5 HP Briggs and Strattor with a flow rate of 1 to 2 gpm.							



MONITOR WELL INSTALLATION SKETCH

	Key West Remedial	
PROJECT NAME	Investigation	INSTALLED BY K. DorseyDATE 6/11/90
PROJECT NO	595392	CHECKED BY M. HamptonDATE 9/20/90
BORING NO.	MW8-5	





PROJECT NUMBER: 595 392. PROJECT NAME Keelbest Tengara Trest of the Soling Number of Soling	PROJE	CT NUN	MBER: 4	595	392	PROJECT NAME: Kee	uWest R	Cne	dia 1-1	nve	2410011			
DRILLING METHODS Hollow Stem Auger/Split Spoon PAGE OF 2 DESCRIPTION DESCRIPTION REMARKS OF 2 THE DESCRIPTION THE DESCRIPTION THE DESCRIPTION THE DESCRIPTION THE D						COORDINATES: A. A				DA				
DESCRIPTION DESCR						GWL: Depth 5,5				5 DA	DATE STARTED: 6/1/90			
DESCRIPTION DESCR	ENGIN	EER/GE	OLOGIS	T: 🔀 .	Donsey									
Limestone fill Limestone mad American Roay Note: Bentonite pellets Drilling Equipment Ford F-700 include Drill added and allowed	DRILLI	NG MET	THODS:	H011	ow Stem f	luger/Split	Spoon			1	•			
Limestone fill Limestone fill, wet Gray to sand order Limestone mod Amelia Gray to sand order Jelia Gr	оертн (\$ 1)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ('6'')	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	Time	EMARKS Onganise Vacanteurin		
Limestone fill Limestone fill, wet Gray to sand order Limestone mod Amelia Gray to sand order Jelia Gr		N/A	10	NA	Limesi	folle fill		N/A	MA	MA				
And I destroy Sind Size OVA Limestone Sind Size OVA Limestone Till Wet Limestone Till Wet Size Orange to sand orange Limestone must Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 insule Drill added and allowed	o-२		20		Tan/wh	ite t and	೬				15:05	- re ady - 4.30077 _		
ALIMESTONE TILL LIMESTONE TILL LIMESTONE TILL LIMESTONE TILL STORM TO SAND ORGAN LIMESTONE MADI ANOTES Drilling Contractor Drilling Solution Note: Bentonite pellets added and allowed			2		i rayel	er cana c	120			Addition of the seconds.		- -		
Limestone -111 States and ord States and ord Limestone fill, wet Gray to sand orden Brown to 11 Limestone mud Limestone mud Limestone mud Limestone mud Limestone mud Note: Bentonite pellets Drilling Contractor Drilling Solution Note: Bentonite pellets added and allowed			â		so rayor -	- 20 A 213	<u> </u>	į.				ova -		
Limestone fill, wet School School School Note: Bentonite pellets Drilling Equipment Ford F-700: Note: Drilling added and allowed	4-6-			*								9 55m]		
Notes: Drilling Contractor Drilling Solution Drilling Equipment Ford F-700: Note: Bentonite pellets All Mestone Tilling Solution Note: Bentonite pellets Added and allowed	i - 8			- 174	ώeπ				:					
Notes: Drilling Equipment Ford F-700: 1001/2 Drill A imestone fill, wet Snay to sand order Brown to ll' Limestone much Limestone much Brown to ll' Ben tonite pellets added and allowed			8		Net	,				The second secon		- - -		
NOTES: Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 incule Drilling added and allowed		Ambigi Ambig o Hagas e completado e a se defenda	33-1	Mark the cold makes address to provide the cold to be a c	Gray +0 Brown +0	sand order u'						-		
Drilling Contractor Drilling Solution Note: Bentonite pellets Drilling Equipment Ford F-700 inchie Driv added and allowed		The second of th		And the state of t								-		
Drilling Contractor Drilling Solution Note: Bentonite pellets Drilling Equipment Ford F-700 inchie Driv added and allowed	ا# خو -	To Property of the State of the	1					\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \		A STATE OF THE STA				
	Drilling Drilling	Contrac	ent E	ord	F= 700 100	fion Suite Driv	NOTE:	ac	ddeo	la	nd all	,		

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	. 0.50 to 2.0
HARD	2.0 to 4.0
VERY.HARD	MORE THAN 4.0

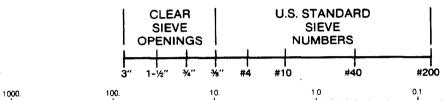
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
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LOOSE	5 - 10
MEDIUM DENSE	11 - 30
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(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

_						
COBBLES	GRAV	/EL		SAND		SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	SIC. AIRD SEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

COANGE-GHANTED GOILG							
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES					
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES					

FINE-GRAINED/HIGHLY ORGANIC SOILS

FINE-GRAINED/ HIGHEY ONGANIC SOILS							
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY					
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS					
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY					
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS					
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS					
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS					
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS					



				VISUAL	CLASSIFICA	ATION '	Ur —	301	LJ		
PROJE	CT NUM	IBER:	595	- 392	PROJECT NAME: K	e West F	(0)	redici		<u>/ PC 4 Ga /</u>	1011 E. 1
BORIN	IG NUME				COORDINATES:		 ;		DA		<u> </u>
ELEVA		71	9"	to MSL	GWL: Depth 5, 5			10-15:0		TE STARTED:	<u> </u>
ENGIN	IEER/GE	OLOGIS	T: 📈	Dorsey	Depth , , ,	Date/Time		<u>/4</u>		TE COMPLETE	
DRILL	ING MET	HODS:	Holi	iow Sten	· Auger/Sp	1.7 Spo	on	,	PA	35	OF <u>_</u>
DЕРТН (←↑)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6'')	RE		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	CONS	re Tine	MARKS Organic Vaper (ppm)
<u> </u>			NA	i e	one mud		14/4	MA	MA		_
14-16	MW CB Ch			Gray/-	unite				ļ		<u> </u>
ļ	GHAIN	2		Limest	one mud to	17'			1		OVA -
-	Since	H			tone to 18'				,	15:45	3ppm
-	mwsF	14		•	white						JPP -
18-18	<u> </u>	38	 	12/1/			$\vdash \vdash$	 			
	€D Tox	10		White	limerock					1600	_
18-20	1	12									
100		- ' '	1.00	· · · · · · ·			W_		1.12		•
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NOT	FS:		<u> </u>	<u> </u>				ч		<u> </u>	
Deille	ar Contra		ri	Ilina Solu	tions						
	C-		-Ord	(F-700 m	tions obile Drill						
Unilin	ıg ⊨quipi 	nent	 	- 100 · 1							
1											
100	101	Ben-	ton:	ite pelleti owed to	s aaaed						
	10, 4	○ ~ (3)	ر ر ر ر ر چ	ruled to	hydrate						
1		4 M CY -	√ (; ;		7						

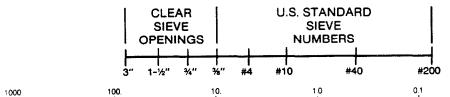
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0 0001



GRAIN SIZE IN MM

COBBLES	GRAV	'EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAI

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

00/11/02 01/11/11/12/00/12/							
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES					
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES					

FINE-GRAINED/HIGHLY ORGANIC SOILS

1							
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY					
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS					
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY					
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS					
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS					
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS					
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS					



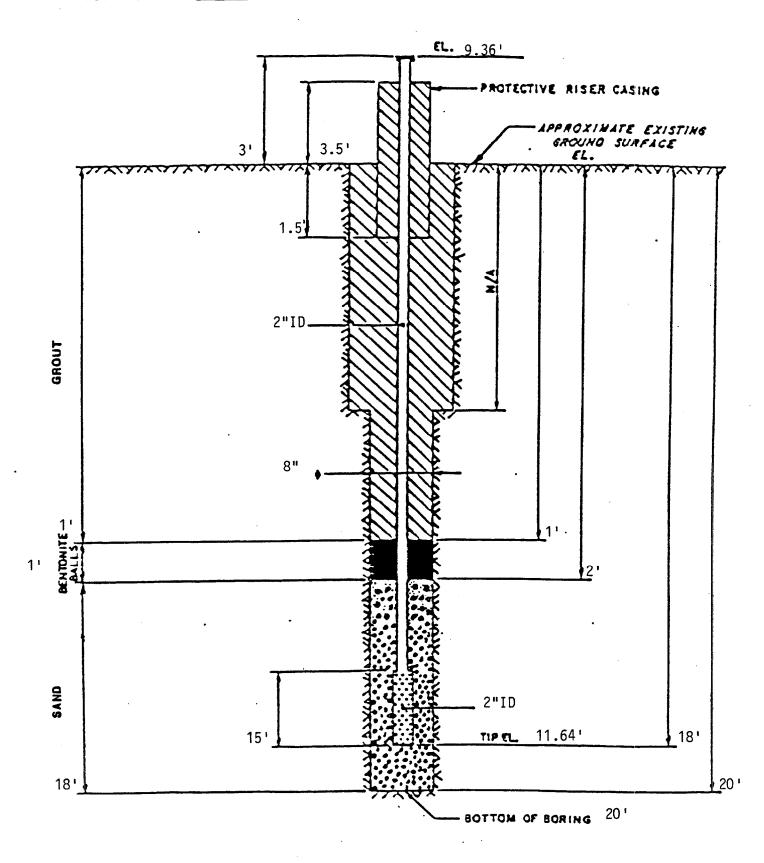
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remed PROJECT NO. 595392	<u>ial Investigatio</u>	ONFIELD ENG./GEO	. K. Dorsey	DATE 6/11/90					
BORING NO. MW8-6		_ 0110011011	. nampton	DATE _ 9/20/90					
	aragus and the same	DATE OF INSTALL	ATION6/1	L/90					
BOREHOLE DRILLING	•								
DRILLING METHOD Hollow S	item Auger	TYPE OF BIT	TYPE OF BIT Rock Bit						
DRILLING FLUID (S) USED:	•	CASING SIZE (S) USED: N/A							
FLUIDFROM	то	· ·	FROM	1					
FLUID FROM			FROM						
DESCRIPTION			•						
TYPE Sch. 40 PVC ASTM	F480 and D170	RISER PIPE MAT	ERIAL Sch. 40	PVC ASTM F480					
DIAMETER OF PERFORATED S		RISER PIPE DIA	METERS:	and D170					
PERFORATION TYPE:		i i	<u>N/A</u> 1. 0	t t					
SLOTS HOLES	SCREEN X		SECTIONS						
AVERAGE SIZE OF PERFORAT	ions010	JOINING METHO	,						
TOTAL PERFORATED AREA	15'	rings to seal	joint.						
RISER PROTECTIVE PIPE LENGTH 5' OTHER PROTECTION Locking riser cap. PROTECTIVE PIPE O.D. 3 3/4' Concrete pad. 2'X2'X6" meets ASTM C150									
ITEM	DISTANCE A	BOVE/BELOW ELEVATION RFACE (Ft.) (MSL)							
TOP OF RISER PIPE				9.36					
GROUND SURFACE		0.0	6.36						
BOTTOM OF PROTECTIVE PIPE		1.5		4.36					
BOREHOLE FILL MATERIALS:				İ					
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1:0	TOP 6.36	BOTTOM - 5.36					
BENTONITE 3/8" pellets	TOP 1.0	BOTTOM 2.0	TOP 5.36	BOTTOM 4.36					
SAND 20/30 Silica, ASTM C775	TOP 2.0	BOTTOM 20.0	TOP 4.36	BOTTOM -13.64					
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A					
PERFORATED SECTION	TOP 3.0	BOTTOM 18.0	TOP 3.36	BOTTOM -11.64					
PIEZOMETER TIP		· ·							
BOTTOM OF BOREHOLE	20.0		-13.64						
GWL AFTER INSTALLATION	4.8	0.26							
AS THE PIEZOMETER FLUSHED AFTER INSTALLATION? AS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? EMARKS Well grouted and pumped on 6/22/90. Pumped approximately 15 gallons via centrifugal pump. Changed color from dark silty to clear sand free water. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.									
centrifugal pump. Changed	color from dark	silty to clear's							



MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BY K.Dorsey DATE 6/11/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW8-6





PRO IF	CT NUM	BER: 5	25	201	PROJECT NA	ME: Key	1,3575	C/3)(3d 07	Ī. ().	105-,,	11 - 5/4- = 8	
BORING NUMBER: 795392					PROJECT NAME: Key West Kenned of						DATE: (27, 9)		
	TION: /		100 10	3 P.	GWL: Depth 3 / Date/Time 6/2//90 141				DA	DATE STARTED: 27/90			
			T· (1	Callagari	Depth N/A Date/Time N/A					TE COMPLETE	D: 5 3 1 25		
					· scer	· · / / / / / / / / / / / / / / / / / /			·	PA	GE	OF 3	
							1						
DЕРТН (4½.)	SAMPLE SAMPLE TYPE & NO.	E BLOWS ON SAMPLER PER	RECOVERY		DESCRIPTION			USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL		ARKS Onganic Voger(bum)	
 	Bander a Valenting (s) on the entertainment	10/2		Irvshed Sand 4	Fifty Proces	ecr)	•	PT N/H			14:00	·	
				2-3'8" Lini 3'8"-4-Lini			,					· -	
- के.स 				Satur	ated L	imes	stone					<u></u>	
				Satur		2:111e	ctone						
6-8				Saturo	nted -	Jime	Stone					 - -	
				Satura	ted Li	mes	tone					•	
- 0-42		1		Saturo	lated h	u me	stone					• •	
12-13								V					
Drillin	a Contra	nent <u> </u>	rili	ling Solut	ions pole tr		and Pi	} د.بی	مان ^{رو} ور. د در	se és Vite	the Addition	W/A.	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

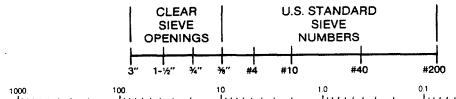
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SIET AND CEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GМ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

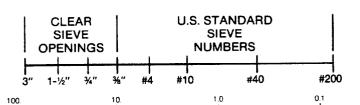
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY		
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS		
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS		
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS		
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS		



PROJECT NUMBER: 595 392	PROJECT NAME: TELLIZEST	Kemira a		8
BORING NUMBER:	COORDINATES: 🔾		DATE:	
ELEVATION: 9,50	GWL: Depth Date/Time		DATE STARTED:	4/2: 90
ENGINEER/GEOLOGIST: C. C. a. a.c.ari	Depth A Date/Time	e (gy, all	DATE COMPLETED	
DRILLING METHODS: 1-5/2014 Stopp	<u> </u>		PAGE 4	OF 2
DEPTH (\$\frac{\fir}{\firighta}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\fir}}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\f	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	CONSTRUCTION SEM	IARKS 2, 53 (5) VO,517 (279)
13-14 N/A MA M/A Scitur	ated limestone	NA NA	1/A	-
14-16	sted Limestone			-
Lime Brown,	mud /gray	1		
Brewn En. 3.	ig ray			
Drilling Contractor Drilling Solution Ford F-700 Moke Driller: Kevin	1 1011		nde pelle and alloc nate	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

` +	C	Z
	M	W



DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001

GRAIN SIZE IN MM

7	GRAVEL		SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM.	SILTY SANDS. SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

THE GUARANTED THOUSE OF GRANTIO COLEG					
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY			
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS			
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS			



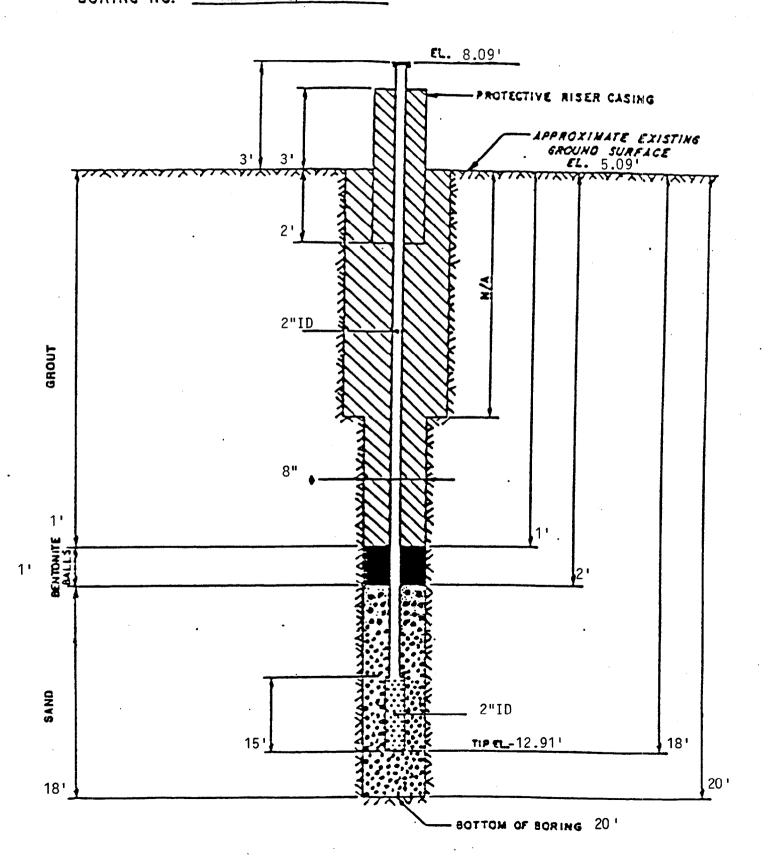
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedi		FIELD ENG./GEO	K. Dorsey	DATE 6/21/90			
BORING NO. MW-16R Replace	ment						
· ·		DATE OF INSTAL	LATION	6/21/90			
BOREHOLE DRILLING		,					
DRILLING METHOD Hollow S		TYPE OF BIT	Rock Bit				
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S) USED: N/A					
FLUIDFROM	то	SIZE FROM TO					
FLUIDFROM	то	SIZE	FROM	то			
DESCRIPTION			•				
TYPE Sch. 40 PVC ASTM	F480 and D170	RISER PIPE MAT	TERIAL Sch	40 PVC ASTM F480			
DIAMETER OF PERFORATED S		RISER PIPE DIA	METERS:	and D170			
PERFORATION TYPE:		1	N/A 1.	t to the second			
SLOTS HOLES	SCREEN X	LENGTH OF PIPE					
AVERAGE SIZE OF PERFORAT	ONS		•	led with "O"			
TOTAL PERFORATED AREA	15'	rings_to					
PROTECTION SYSTEM RISER PROTECTIVE PIPE LEN	GTH 5'	OTHER PROTECT	FION Locking Di	icon Can			
PROTECTIVE PIPE O.D.		Concrete pad 2'X2'X6" meets ASTM C150					
oration							
ITEM	DISTANCE AB GROUND SU	RFACE (Ft.)	ELEVATION (MSL)				
TOP OF RISER PIPE		.0	8.09				
GROUND SURFACE	ļ	.0	5.09				
BOTTOM OF PROTECTIVE PIPE	2	.0		3.09			
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 1.0	TOP 5.09	воттом 4.09			
BENTONITE 3/8" Pellets	TOP 1.0	BOTTOM 2.0	TOP 4.09	BOTTOM 3.09			
SAND 20/30 Silica, ASTM C775	TOP 2.0	BOTTOM 20.0	TOP 3.09	BOTTOM -14.91			
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A			
PERFORATED SECTION	TOP 3.0	BOTTOM 18.0	TOP 2.09	BOTTOM -12.91			
PIEZOMETER TIP							
BOTTOM OF BOREHOLE	20.0		-14.91				
GWL AFTER INSTALLATION	5.1	6		-0.07			
3 THE PIEZOMETER FLUSHED A 43 A SENSITIVITY TEST PERFOR EMARKS Rentonite hydrate	MED ON THE PIEZ d 6/21/90. Wel	COMETER? 1 developed and	YES No.	D X D X ed 6/22/90. Water			
<u>changed slowly from dark qu</u> wells was a 5 HP Briggs an	rey with a slimy d Stratton with a	<u>residue to clea</u> a flow rate of 1	r silt free. to 2 gpm.	Pump used to devel			



MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BY K. DorseyDATE 6/21/90
PROJECT NO. 595392 CHECKED BY M. Hampton DATE 9/20/90
BORING NO. MW-16R Replacement





PROJE	CT NUM	MBER: 5	05	200	PROJECT NAME: Ke	illest k	Rem	cdial	$\overline{}$	vesting:	د المناه من المناه و
		BER: R		218	COORDINATES: NA	, • • • • • • • • • • • • • • • • • • •	·		DA	TE: 5730	191
	TION:				GWL: Depth 5,5	Date/Time	5/30	190-16:15		TE STARTED:	
ENGIN	IEER/GE	OLOGIS	T: 😾		Depth N/A				DA	TE COMPLET	ED: 5
DRILL	ING MET	HODS:	•			e 10 -	() (٠, ، ،	PA		OF 2
ОЕРТН (- ₹-} -)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	rinie	EMARKS Örgan IC Vapor (ppn
0-2	NA	7 & g &	N/A	Limeston Gravel	ne fill dr to sands	Ize	N/A	N/A	***	16:05	
 2-4		8 9 3 3		Cloth	ie fill, ary						
4-4		भेक दे	:	Limestor Plastic Wet & Production	ne fill 2 + metai 5,5' 1,0400,9010	care	:				410 ppm 014
6-8		3 20 2 2		Spech ?	•						
5-10		3 7 8		Liniesto. Grave Plasti Produ	ne Fill 1 - 0 59 nd 2 c + 3 1955 c+ 8007, blac	12 c Rliguid					
10-12		3 1		Limestoi Gravel	***	e			-		6 ppm OVA
		2		Spoon e	nipty						
12-15		i	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	141- 15'5". L gravel	imestone fil size, produc					Para San San San San San San San San San Sa	
Drillin	ig Contra	nent Fo	rd	ing Solut F-700 Mobil ex	1011	ac	ad e		nd	pelle allou e	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

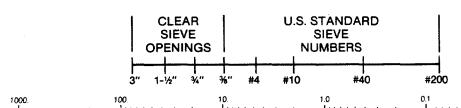
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

0000150	GRAVEL		SAND			SILT AND CLAY			
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SIL! AND OLA!			

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	Ċ	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



					T==0.50=	. 14-4	F		1		~: #=1		
		MBER: 5	95.	392 <u> </u>	PROJECT NAME: K		Ken	ncara					
	IG NUM				COORDINATES:								
ELEVATION: 9,4 ENGINEER/GEOLOGIST: K. Dorsey										DATE STARTED: 5/30/90 DATE COMPLETED: 5/30/90			
			T: K ,	Dorse/	Depth 🗤 💪	Date/Time							
DRILL	ING MET	HODS:	* 1	in the second second		2. 1 1. 1.	11 TH	<u> </u>	is [PAI	GE <u>2</u>	OF L		
оертн (∱\)		BLOWS ON SAMPLER PER (6 '')	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	CONS	nen Tinje	MARKS Onganic Varsons		
15-16	NA	1	NA	1515"-16-	Lime mud gray/whi	te	N/A	N/A :	HA		3.0ppm - OVA		
16-18		332		Glass Product O		d 							
- - - - - - - - - - - - - - - - - - -	:	3 456		Fragmer	me mud, s its visible	<u>د</u>							
20 22		49 77		Glass	ne fillan								
22-24	EP TOX	5 6 55	-	G	mestane f 1935 fragm me rock, wi	ents				16:45	BICPPM -		
24-24	NYS	5554		Lime roc	k, white								
 				END O	f Boring					(2.5 ap aivide land fi	proximate, between 11 + base)		
Drillin	g Contra g Equipn	ctor D	ord	ing Solut F-700 mo	ion obile Drill	NOTE:	a	aae	d a	ite pe and a rate	,		

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

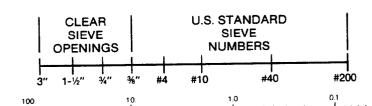
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(") STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

						<u> </u>
GRAVEL			SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY				
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS				
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY				
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS				
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS				
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS				
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS				



Time vapor 1 24 Limestone Fill Ary NA NA AA GOOD 0-2 62 Refusal norecovery 1.5p	PROJE	CT NUM	ARER: 6	253	301	PROJECT NAME: Ko	11/257 2		· 31	, .	2 *** - 3 * 1 * 1 * 1 * 1	8
ELEVATION 9, 1 BROWNEER/GEOLOGIST K, Dorsey Depth N/A Date/Time K/J DATE COMPLETED 5/3/, 0 BROWNEER/GEOLOGIST K, Dorsey DESCRIPTION REMARKS Cross VAPA Time Time Time DESCRIPTION DESCRIPTIO) · · · ·	COORDINATES: N/	4	7110	<u></u>		TE: S	
ENGINEER/GEOLOGIST K. DONSEY Depth N/A Date/Time N/4 DRILLING METHODS STANDING TO STANDING				<u> </u>							TE STARTED:	5/3//03
DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION REMARKS Crait Valper Time A A A A A A A A A A A A A				T: K,	Dorsell	<u> </u>	Date/Time	N/	<u>ر ، ، ، ، ، ، ، ، ، ، ، ، ، ، ، ، ، ، ،</u>	DA		
DESCRIPTION DESCR	DRILL	NG MET	HODS:	540	ndara ren	9-1777/EN ES	5 5011	1 32	00 005	PA		
Limestone fill, any Refusal no recovery Agarnown to 4' Limestone fill, any Plastic, AA dry battery, apper Limestone fill, ary Amendal, black liquid Speen 2% empty Limestone fill, gray Metal, black liquid Speen 2% empty Limestone fill, gray Glass, metal, black liquid Speen 2% empty Limestone fill, gray Glass, metal, black liquid Speen 2% empty Limestone fill, gray Glass, metal, black liquid Speen 2% empty July 14'-14.5'- Limestone fill, gray Jack liquid								The second secon				
Limestone fill, any Refusal no recovery Refusal n	DЕРТН (<i>←</i> ≯≀)		BLOWS ON SAMPLER PER (_()			DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTIO		Croanic
Assertation to 4' investore fill, and Plastic, AA dry battery, Doper Limestone fill, ary Limestone fill, gray metal, black liquid Spoon 20% empty Limestone fill, gray Glass, metal, plack liquid Spoon 90% empty 12-14 2 Spoon 90% empty 2 14'-14,5'- Limestone fill, gray Jack liquid Spoon 90% empty 14-14,5'- Limestone fill, gray Jack liquid	 9-2_	2.A	24	N/A	Limesto	one fill, ar	Υ	NA	N/A	**	9:00	OUA
Plastic, AA dry battery, Poper Limestone Fill, dry Limestone Fill, gray metal, black liquid Spoon 20% empty Limestone Fill, gray Glass, metal, plack liquid Spoon 20% empty 12-14-14-14-15'-Limestone Fill, gray 14'-14-5'-Limestone Fill, gray NOTES:	g-U					· ·	?ry		:			1.5 ppm 0v2
Limestone fill, wet Limestone fill, wet Limestone fill, gray metal, black liquid Spoon 23% empty Limestone fill, gray Glass, metal black liquid Spoon 90% empty 12-14 2 14'-14.5'- Limestone fill, gray Juliant Notes:	 		5		Plasti					;		:
Limestone fill, wet Limestone fill, gray metal, black liquid Spoon 20% empty Limestone fill, gray Glass, metal, black liquid Spoon 90% empty 12-14 2 Spoon 90% empty 14'-14,5'-Limestone fill, gray Jul-14: 3 Spoon 90% empty			3		Limest	one Fill, o	dry					- -
Limestone fill, gray Glass, metal, black light Spoon 90% empty 14-14,5'- Limestone fill, gray Notes:	3 -73		3 1 1 1 1		Limest	one Fill, u	wet					
Limestone fill, gray Glass, metalolack light Spoon 90% empty 14'-14,5'-Limestone fill, gray Notes:	10-12		ે ગુરાય		Limest metal Spoor	tone fill, e l, black lique n 23% emp	aray					
1 3 14'-14,5'- Limestone fill, gray Notes: Notes:					Limesto Glass Spoor	one fill, g 5, metal, blace 1 90% emp	ray kliqlid oty	:	÷			-
I NOTES:	المارخ لمدو		2		14'-14,5'-L	imestone (i	11,gray	į.	·	<u> </u>		_
Drilling Equipment Ford F-700 Mobile Drill Driller: Kevin & Aiek	Drilling Drilling	g Contrac	nent Fo	rill ord + A	ling Solut F-700 Mo.	Ú					·	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

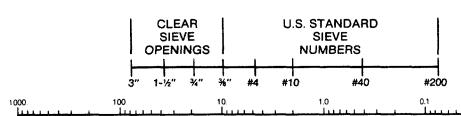
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	/EL		SAND	•	SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	МН	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595	392	PROJECT NAME: Key	West	Rer	nedia	1 I	nuest, 99	-1011-51-78
BORING NUMBER: 👙 🎝		COORDINATES: V/A				DA	TE: ぢ/��/,	ل نوت
ELEVATION: 9,/		GWL: Depth b'	Date/Time	5/3/	190-910	DA	TE STARTED:	5/3.170
ENGINEER/GEOLOGIST: K	. Dorsey	Depth 🗤/ˌ٨i	Date/Time		14	DA	TE COMPLET	
DRILLING METHODS: 👵 🕾	District Pene	100.11 (5)	/Doi:	201	1//5	PA	GE 🛴	OF 🚅
DEPTH () SAMPLE TYPE & NO. BLOWS ON SAMPLER PER () RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	Time	EMARKS Organic Valort
- N/A 1 1/A	black L			N/A	N/A	~/		_
	Plastic	black liquid		;	;	:		1.5 PPM - OVA -
30F-2 11 3P 10 2-20 104 10 V	Lime roo white Samph	1				· · ·	9:30	, <u> </u>
NOTES: Drilling Contractor Dril Drilling Equipment Ford Driller: Kevin & A	ling Solut	ion ile Drill						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

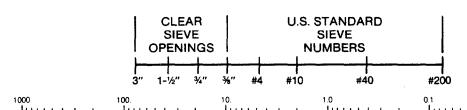
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(1)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CENT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, . GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595 392	PROJECT NAME: Key West Re	med	ial Ir	vest	nearthn -	Site#8	
BORING NUMBER: 3 3	COORDINATES:	DA.	DATE: 5/3//90				
ELEVATION: 7, 8	GWL: Depth (Date/Time 5/31/90 -11:15						
ENGINEER/GEOLOGIST: K. Dorsey	Depth A Date/Time N.A				DATE COMPLETED: 5/31/90		
DRILLING METHODS: Standard Pene	tration lest/ Soll B	011	19	PA	3E ,	of (j	
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	remi Time	ARKS Organie Vapor(pyni)	
d Wood	, , , ,	N/A	AM	7	11:15	-	
$\begin{bmatrix} 1 \\ 3 \\ 3 \end{bmatrix}$ wood	ne fill, dry		3			-	
4-6 3 Plastic	ne fill, dry	1				I ppm -	
5000 7 109 Black 1 1901	d my rubber hose						
5poon 95	e fill, wet, gray sand size 90 empty uid						
Limestor Gravel to Speen 959 Black 122	re fill, wet, gray so some size, wood to empty uid ine fill					_	
Limesto Lime mi Black lig	Ja gray			,			
41-15						1	
NOTES: Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 Mobite Driller: Kevin + Alex	ns Drill		-				

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

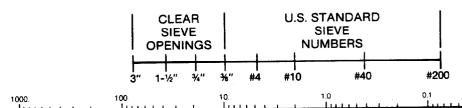
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

_	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595392	PROJECT NAME: KE4	West Re	mea	lial I	nve	stigation-	Sine= 8
BORING NUMBER: 83	COORDINATES: NA			DATE: 5/3//90			
ELEVATION: 7, 8	GWL: Depth 6	Date/Time	5/3	1/90		TE STARTED:	
ENGINEER/GEOLOGIST: K. Dorsey	Depth N/A	Date/Time		<u>Z</u>		TE COMPLETE	
DRILLING METHODS: Standard Pene	etration Test	15011 E	sor'i	<u> </u>	PA	GE 🚄	OF 🚊
DEPTH (ft,) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6 ") RECOVERY (1)	DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	re Time	MARKS Organic Value (appn)
15-16 1 Gray san	d to peq ooli	tes	MA	14/4	1	en e	9ppm _ ОVД
Lime m Black li	· · · · · · · · · · · · · · · · · · ·						
Limestone	efill-gravel+059 light merock	nd Site				12:00	appm -
END OF	BORING						
Drilling Contractor Drilling Soluti Drilling Equipment Ford F-700 Mobil Driller: Kcuin + Alex	eDrill						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

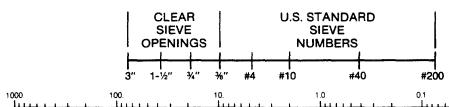
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

0000150	GRAV	/EL	SAND			SILT AND CLAY		
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAY		

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES (APPRECIABLE AMOUNT OF FINES)	GΜ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO PINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML.	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY		
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS		
	ÖL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
	мн	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS		
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS		
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS		



PROJECT NUMBER: 595394	PROJECT NAME:	est Reme	dialIr	nuestigation	1. Size= 8
BORING NUMBER: B-4/	COORDINATES: 1/2			DATE: 3/3/	95
ELEVATION: 7,3	GWL: Depth o D	ate/Time 5/3/	190-12:40	DATE STARTED:	
ENGINEER/GEOLOGIST: K, Dorsey	Depth +/ ♣ □	ate/Time N/A		DATE COMPLETE	ن نور برای رسین D:
DRILLING METHODS: Standard Pene	tration test/S	soil Bor.	117	PAGE /	of 2
DEPTH (\$4) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (\$6") RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	CONSTRUCTION	MARKS Onganis Valoen ppm
- N/A 12 N/A Limestor 14 10 0-2 10	ne fill, dry	NA	N/A N	12:40	1 ppm _
Limestor	ined limestone				_
4-6 3 - 1 mr = +0	re Fill, dry				- -
	one , wet				_
- a i	one fin wet				lppm -
57 Limest	ne fin, wet				
	Limestone f me mud hite				-
14-15 Lime mu gray/whi	d +e				_
Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 Mobile Drill Driller: Kevin					

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

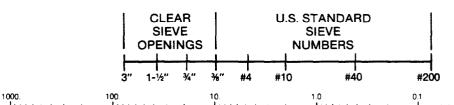
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

0000150	GRAV	/EL		SAND		OUT AND OLAV	
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY		
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS		
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS		
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS		
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS		



PROJECT NUMBER: 595 392	PROJECT NAME: Key West R	Remedial	injestication	111-5140318
BORING NUMBER: B-4	COORDINATES: N/A		DATE: 54/31/	90
ELEVATION: 7, 3	GWL: Depth 6 Date/Time	e 5 /3//90-/3:10		5/3//93
ENGINEER/GEOLOGIST: K, DOrsey	Depth 🗸/🚊 Date/Time		DATE COMPLETE	
DRILLING METHODS: Standard Penet	ration Test / Soil	Boring	PAGE (C	OF 2
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER () RECOVERY ()	DESCRIPTION		CONSTR	narks Organie Vaporépun
15-16 Lime mu	d, gray/white	M/A M/A	1	_
6-18 Fires	d, gray/white			
L] Fires	ne anove, some			-
- BSF-4 20 Lime Sto - BP 40 Lime re	one FIII		/3:/0	Ippm =
20-22 END 0 +	BORING			
Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 Mobil Driller: Kevin	en le Drill?			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)			
VERY SOFT	LESS THAN 0.25			
SOFT	0.25 to 0.50			
FIRM	0.50 to 2.0			
HARD	2.0 to 4.0			
VERY HARD	MORE THAN 4.0			

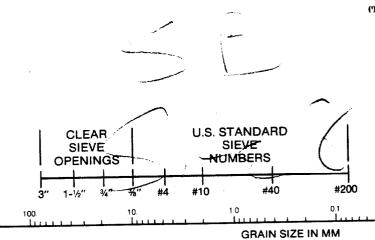
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(') STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES **USING A 140-POUND HAMMER FALLING FREELY** THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



SILT AND CLAY	SAND			/EL	GRAV	-
	FINE	MEDIUM	COARSE	FINE	COARSE	COBBLES

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

FINE

COARSE

1000

COARSE-GRAINED GOILD				
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES		
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES		
GRAVELS WITH F!NES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES		
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES		
CLEAN SANDS (LITTLE OR NO FINES)	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS. SAND-SILT MIXTURES		
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES		

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY			
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
	мн	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS			
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS			

Site 9 Trumbo Point Fuel Farm and Piers

WELL CONSTRUCTION DETAILS - SITE 9

Trumbo Point Annex, Fuel Farm and Piers NAS-Key West Key West, Florida IT Project No. 595392

WELL	COMPLETION DATE	TOP OF CASING ELEVATION (11) MSL	GROUND SURFACE ELEVATION (R) MSL	TOTAL WELL DEPTH (N)	LENGTH OF SCREEN (N)	SCREENED INTERVAL (N) MSL	SLOT SIZE (n)	THICKNESS OF SAND PACK (II)	THICKNESS OF BENTONITE SEAL (N)	THICKNESS OF GROUT COLUMN (II)
MW 9-10	05/31/90	9.75	6.75	10	7.5	4.25 to -3.25	0.010	9	0.5	0.5
MW 9-11	05/31/90	10.45	7.45	10	7.5	4.95 to -2.05	0.010	9	0.5	0.5
MW 9-12	05/31/90	9.56	6.56	10	7.5	4.06 to -3.44	0.010	9	0.5	0.5
MW-6R	05/31/90	9.75	6.75	10 ·	7.5	4.25 to -3.25	0.010	9	0.5	0.5



PROJECT N	UMBER: (5953	392			1651 ?	277.0	91012	n ses	7.000.00	775
BORING NU		W9.	-10	COORDINAT	ES: N/A					TE: 5-/3//	
LEVATION				GWL: Depth	4'	Date/Time				TE STARTED:	
			Callacari	Depth	N/A	Date/Time		,/ <u>4</u>			D: 5-131,90
RILLING M	ETHODS:	HEI	ow Sten: A	luger, S	<u> </u>		·		PAG	3E /	OF'/
(4字·)	BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION			USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION		MARKS Degante Vacorton
2-4 Lec Span Analy	4.96.0 264.0	M/A	Limesta Limest (Free	tone file ore file product	war war Tresen	ravei ovei	PT N/A	2/2	74	10:00	
2-0	.1.3.46	V V	Free	Produc				\tag{ \} \tag{ \tag} \} \tag{ \tag{ \} \tag{ \tag{ \tag{ \tag{ \tag{ \tag{ \tag{ \tag} \} \tag{	\/	10:30	
NOTES: Drilling Cor Drilling Equ	ipment $ ilde{\mathcal{F}}$	orti	ing Solution	1077 18. UNI		CTE: 3				වුව 11 සිටි ශ්රී විශ්ය	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

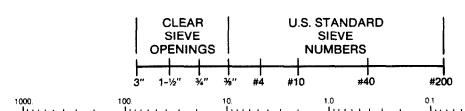
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	ÆL .		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F:NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



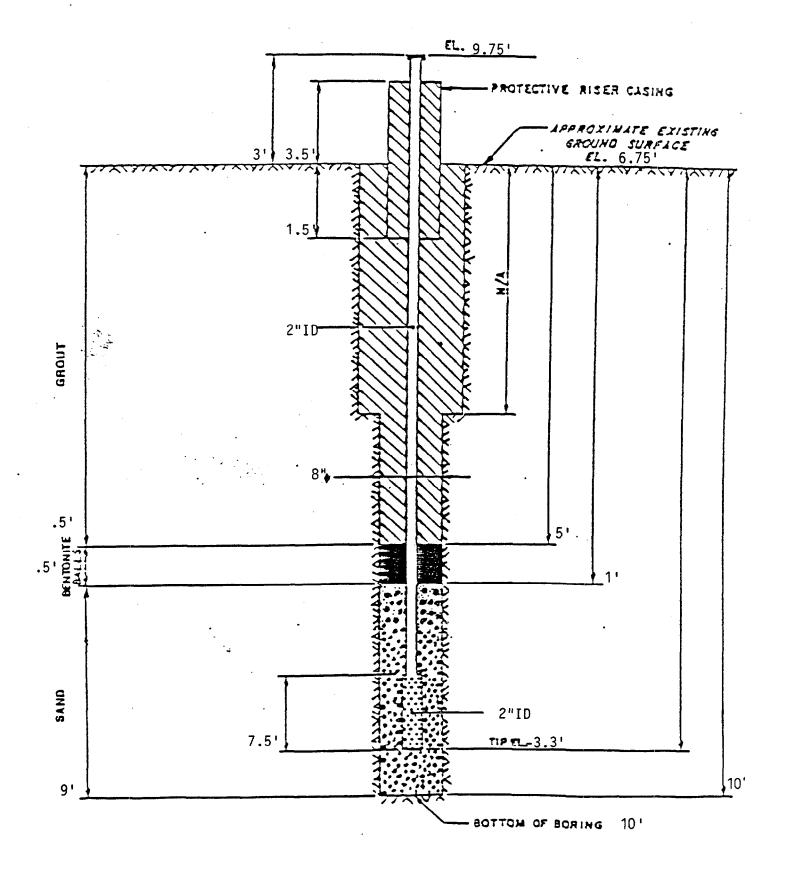
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedia				DATE 5/31/90		
PRCJECT NC. 595392		_ CHECKED BY <u>G</u>	Stephens	DATE 9/20/90		
ORING NO. MW9-10		DATE OF INSTAL	LATION	5/31/90		
OREHOLE DRILLING						
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT	Rock Bit			
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S	S) USED:	N/A		
FLUIDFROM	то	SIZE	FROM	TO .		
FLUIDFROM	то	SIZE	FROM	то		
DESCRIPTION				•		
TYPE Sch. 40 PVC ASTM F	480 and D170	RISER PIPE MA	TERIAL Sch. 40	PVC ASTM F480		
DIAMETER OF PERFORATED SI	ECTION 2"		METERS:	1 0470		
PERFORATION TYPE:		O.D	N/A1	. D. <u>2"</u>		
SLOTS HOLES	SCREEN X	LENGTH OF PIP	E SECTIONS	5'		
·- 	0.10	JOINING METHOD Flush threaded with "0"				
AVERAGE SIZE OF PERFORATI	ONS	JOINING METHO	O <u>Flush thread</u>	ed with "U" .		
TOTAL PERFORATED AREA		JOINING METHO rings to seal		ed with "U" .		
TOTAL PERFORATED AREA	7.5' GTH 5'	rings to seal	joints.	Riser Cap		
TOTAL PERFORATED AREA ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG	7.5' GTH 5' 3 3/4' DISTANCE A	rings to seal	joints. TION Locking 2'X2'X6" meets	Riser Cap		
TOTAL PERFORATED AREA ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D	7.5' GTH 5' 3 3/4' DISTANCE AS GROUND SU	OTHER PROTEC concrete pad	joints. TION Locking 2'X2'X6" meets	Riser Cap s ASTM C150		
TOTAL PERFORATED AREA ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D ITEM TOP OF RISER PIPE	7.5' GTH 5' 3 3/4' DISTANCE AS GROUND SU	OTHER PROTEC concrete pad	joints. TION Locking 2'X2'X6" meets	Riser Cap s ASTM C150 EVATION (MSL)		
TOTAL PERFORATED AREA ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE 0.D	7.5' GTH 5! 3 3/4' DISTANCE AS GROUND SU	OTHER PROTEC concrete pad BOVE/BELOW JRFACE (Ft.)	joints. TION Locking 2'X2'X6" meets	Riser Cap s ASTM C150 EVATION (MSL) 9.75		
TOTAL PERFORATED AREA ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D ITEM TOP OF RISER PIPE GROUND SURFACE BOTTOM OF PROTECTIVE PIPE BOREHOLE FILL MATERIALS:	7.5' GTH 5! 3 3/4' DISTANCE AS GROUND SU	OTHER PROTEC concrete pad BOVE/BELOW URFACE (Ft.) 3.0	TION Locking 2'X2'X6" meets	Riser Cap s ASTM C150 EVATION (MSL) 9.75 6.75 5.25		
TOTAL PERFORATED AREA ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D ITEM TOP OF RISER PIPE BORUND SURFACE BOTTOM OF PROTECTIVE PIPE BOREHOLE FILL MATERIALS: GROUT ASTM C150 BENTONITE 3/8" Pellets	7.5' GTH5' 3 3/4' DISTANCE AS GROUND SU	OTHER PROTEC concrete pad BOVE/BELOW URFACE (Ft.) 3.0 1.5 BOTTOM .5 BOTTOM 1.0	TION Locking 2'X2'X6" meets EL TOP 6.75 TOP 6.25	Riser Cap S ASTM C150 EVATION (MSL) 9.75 6.75 5.25 BOTTOM 6.2 BOTTOM 5.7		
TOTAL PERFORATED AREA ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D ITEM TOP OF RISER PIPE GROUND SURFACE BOTTOM OF PROTECTIVE PIPE BOREHOLE FILL MATERIALS: GROUT	7.5' 3TH5' 3 3/4' DISTANCE AS GROUND SU TOP 0.0 TOP 0.5 TOP 1.0	OTHER PROTEC concrete pad BOVE/BELOW JRFACE (Ft.) 3.0 0.0 1.5 BOTTOM .5 BOTTOM 1.0 BOTTOM10.0	TION Locking 2'X2'X6" meets TOP 6.75 TOP 6.25 TOP 5.75	Riser Cap 5 ASTM C150 EVATION (MSL) 9.75 6.75 5.25 BOTTOM 6.2 BOTTOM 5.7 BOTTOM -3.2		
TOTAL PERFORATED AREA ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D ITEM TOP OF RISER PIPE GROUND SURFACE BOTTOM OF PROTECTIVE PIPE BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	7.5' STH5' 3 3/4' DISTANCE AS GROUND SU TOP 0.0 TOP 0.5 TOP 1.0 TOP N/A	POVE/BELOW DRFACE (Ft.) BOYE/BELOW DRFACE (Ft.) BOTTOM .5 BOTTOM 1.0 BOTTOM 1.0 BOTTOM N/A	TION Locking 2'X2'X6" meets TOP 6.75 TOP 6.25 TOP 5.75 TOP N/A	Riser Cap S ASTM C150 EVATION (MSL) 9.75 6.75 5.25 BOTTOM 6.2 BOTTOM 5.7 BOTTOM -3.2 BOTTOM N/A		
ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D. ITEM TOP OF RISER PIPE GROUND SURFACE BOTTOM OF PROTECTIVE PIPE BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A PERFORATED SECTION	7.5' 3 3/4' DISTANCE AS GROUND SU TOP 0.0 TOP .5 TOP 1.0	OTHER PROTEC concrete pad BOVE/BELOW JRFACE (Ft.) 3.0 0.0 1.5 BOTTOM .5 BOTTOM 1.0 BOTTOM10.0	TION Locking 2'X2'X6" meets TOP 6.75 TOP 6.25 TOP 5.75	Riser Cap S ASTM C150 EVATION (MSL) 9.75 6.75 5.25 BOTTOM 6.2 BOTTOM 5.7 BOTTOM -3.2		
ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D. ITEM TOP OF RISER PIPE GROUND SURFACE BOTTOM OF PROTECTIVE PIPE BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, GRAVEL N/A PERFORATED SECTION PIEZOMETER TIP	7.5' GTH 5' 3 3/4' DISTANCE AR GROUND SU TOP 0.0 TOP .5 TOP 1.0 TOP N/A TOP 2.5	POVE/BELOW DRFACE (Ft.) BOYE/BELOW DRFACE (Ft.) BOTTOM .5 BOTTOM 1.0 BOTTOM 1.0 BOTTOM N/A	TION Locking 2'X2'X6" meets TOP 6.75 TOP 6.25 TOP 5.75 TOP N/A	Riser Cap S ASTM C150 EVATION (MSL) 9.75 6.75 5.25 BOTTOM 6.2 BOTTOM 5.7 BOTTOM -3.2 BOTTOM N/A BOTTOM -3.2		
TOTAL PERFORATED AREA ROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D ITEM TOP OF RISER PIPE GROUND SURFACE BOTTOM OF PROTECTIVE PIPE BOREHOLE FILL MATERIALS: GROUT	7.5' STH5' 3 3/4' DISTANCE AS GROUND SU TOP 0.0 TOP 0.5 TOP 1.0 TOP N/A	POVE/BELOW DRFACE (Ft.) BOYE/BELOW DRFACE (Ft.) BOTTOM .5 BOTTOM 1.0 BOTTOM 1.0 BOTTOM N/A	TION Locking 2'X2'X6" meets TOP 6.75 TOP 6.25 TOP 5.75 TOP N/A	Riser Cap S ASTM C150 EVATION (MSL) 9.75 6.75 5.25 BOTTOM 6.2 BOTTOM 5.7 BOTTOM -3.2 BOTTOM N/A		



MONITOR WELL INSTALLATION SKETCH

PROJECT NAME Investigation INSTALLED BYC.CallegariDATE 5/31/90
PROJECT NO. 595392 CHECKED BY G.Stephens DATE 9/20/90
BORING NO. MW9-10





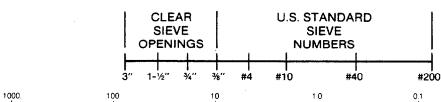
PROJECT NUMBER: 595 392	PROJECT NAME: KEL WEST	e.cmc	dial.		cs+1,-0	1-5118-9
BORING NUMBER: 77 JU 9-11	COORDINATES:				TE: 57, 2	
ELEVATION: , O, 40	GWL: Depth 4' Date/Time		190-1115		TE STARTED:	
ENGINEER/GEOLOGIST: 2, Co. geor	Depth Date/Time	e		PA	TE COMPLETE	OF
DRILLING METHODS: Hollow Sten A	uger Split Spoon			1, 7,		
DEPTH (🗜 7) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (() RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	nen Time	MARKS Organic Vacor(20m)
0-2 1/4 6 N/4 0-1- Organ	nic Top Soil stone Fill	PT MA	NA	MA	11:35	-
Head & Charky	one w/Shell			1		11ppm _
Lime r 2 White/						
5 3 4 4 2 2 2		;				-
3 2 2 me 1 2-10 1 4 4 2 2 me 1			· ·	*	12:00	<u> </u>
End	+ Baring					-
NOTES: Drilling Contractor Drilling Solution Drilling Equipment Ford-F-700 Mick Driller: Mike & Ed	pile Drill		೧೮೮		re pos Maria	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(1)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



1000. 100 10 10 0.1 0.01 0.001 0.0001 0.0001 GRAIN SIZE IN MM

 COBBLES
 GRAVEL
 SAND
 SILT AND CLAY

 COARSE
 FINE
 COARSE
 MEDIUM
 FINE

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	C	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS. SILTY CLAYS, LEAN CLAYS
	Ö	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



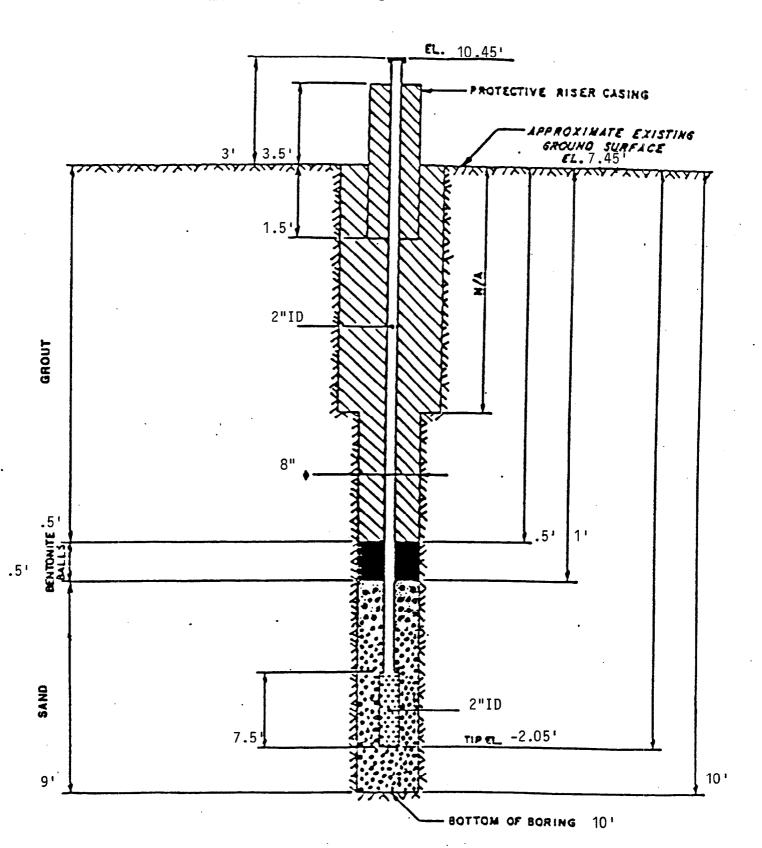
MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedia	al Investigation	FIELD ENG./GEO. CHECKED BY G. S	<u>C_Callegari</u> Stephens	DATE 6/19/90				
BORING NO. MW9-11		,						
		DATE OF INSTALL	ATION5/3	1/90				
BOREHOLE DRILLING								
DRILLING METHOD Hollow	Stem Auger	TYPE OF BIT	Rock Bit					
DRILLING FLUID (S) USED:		CASING SIZE (S) USED: N/A						
FLUID FROM	то	SIZE FROM TO						
FLUIDFROM	то		FROM	_то				
DESCRIPTION			•					
TYPE Sch. 40 PVC ASTM	F480 and D170	RISER PIPE MAT	ERIAL Sch. 40 F	VC ASTM F480				
DIAMETER OF PERFORATED S			METERS:					
PERFORATION TYPE:]	<u>/A</u> 1. D	1				
SLOTS HOLES	SCREEN X	LENGTH OF PIPE						
AVERAGE SIZE OF PERFORATI		JOINING METHOD	•					
TOTAL PERFORATED AREA		rings to seal						
RISER PROTECTIVE PIPE LENGTH PROTECTIVE P:PE O.D3		OTHER PROTECT _Concrete Pad 2	ION <u>Locking Ri</u>					
ITEM	GROUND SU	RFACE (Ft.)	VATION MSD					
TOP OF RISER PIPE	<u> </u>	.0	10.45					
GROUND SURFACE	0	.0	·	7.45				
BOTTOM OF PROTECTIVE PIPE	1	.5		5.95				
BOREHOLE FILL MATERIALS:		0077014 =	7.45	00777011 6 05				
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM .5	TOP 7.45	BOTTOM 6.95				
BENTONITE 3/8" Pellets	TOP .5	BOTTOM 1.0	TOP 6.95	BOTTOM 6.45 BOTTOM -2.55				
SAND 20/30 Silica, ASTM C775		BOTTOM 10.0		BOTTOM N/A				
GRAVEL N/A		BOTTOM N/A		BOTTOM -2.05				
PERFORATED SECTION PIEZOMETER TIP	TOP 2.5	BUTTOM 9.5	TOP 4.95	1801 TOM -2.05				
BOTTOM OF BOREHOLE	10.0		-2	.55				
GWL AFTER INSTALLATION	N/A		/A					
S THE PIEZOMETER FLUSHED A AS A SENSITIVITY TEST PERFORMARKS Well was developed a from silt grey to clear, to	FTER INSTALLAT MED ON THE PIE fter installation using a centrifu	ION? ZOMETER? n until water wa	YES NO YES NO as silt free. 1 d approximately	X X 2:00 noon, change				
Pump used was a 5 HP Brig	gs and Stratton	with a flow rate	or I to Z gpm.					



MONITOR WELL INSTALLATION SKETCH

ROJECT NAME Investigation INSTALLED BYC.CallegariDATE 5/31/90
PROJECT NO. 595392 CHECKED BY G.Stephens DATE 9/20/90
BORING NO. MW9-11





PROJECT NUMBER: 595 392	PROJECT NAME: Key West ?	emedial Investigation-Site=9				
BORING NUMBER: B - 39		COORDINATES: N/A DATE: 6/6/90				
ELEVATION: 7,08	GWL: Depth 5,5 Date/Time	e 6/6/90 -12:20 DATE STARTED: 6/6/90				
ENGINEER/GEOLOGIST: G. Steph						
DRILLING METHODS: Standard	Penetration Test/Soil	Boring PAGE / OF /				
DEPTH (f f,) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6'') RECOVERY ()	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF) WELL CONSTRUCTION (Tbbu)				
0-2 15 U	nestone fill nsaturated	12120				
24 / 3 H	nestone fill nsaturated ard Rx+shell fragments					
5	itic Limestone fill aturated yshells	3ppm _				
	ND OF BORING					
Drilling Contractor Drilling S Drilling Equipment Ford F-700 Driller: Kevin + Alex	olution Mobile Drill					

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

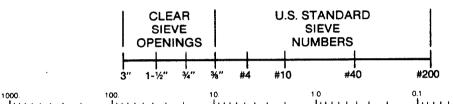
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

0000150	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

		The state of the s
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GΜ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



		MBER: 5						२८ /	nedic			1+icn-Site#
		BER: 13 -	<u>- 38</u>		GWL: Dep	NATES: N/	Date/Time	i li io	1 - 11 5E	- DA	TE: 6/679 TE STARTED:	1/1/20
ELEVA"		6.9'		54-05-05		pth NA	Date/Time			DA.	TE STARTED: TE COMPLETE	D/2/2 9/3
ENGIN	ELH/GE	ULUGIS	1: <u>(S,</u>	Stephens			15011 8	2001	/: C	PAC		of 7
DRILLI	NG ME	MOD3. ~	7 7 6 7 1	,01016 116		· · · · · · ·	/ 00,,			7		
оертн (-∰-)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ((6)	RECOVERY ()		DESCRIPTI	ON		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	Time	MARKS Organic Va pof _{epon})
03	N/A	18 11 9.8	NA	Limest Loose,				NA	N/A	NJA	11:55	
2-4	V_	7 3 3 3	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Limest Locse, c	iayey	/ 	/shells					
4-6	HEAD SPACE ANALYSS	3 3 3 3	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Limest Silty -		F;11				1	12:00	Oppm
				END			NG					-
NOT Drillir Drillir Drille	ES: ng Contra ng Equipi nr: <u>どご</u>	actor D ment Fo	rill prd A	ing Sclut F-700 Mob	ion ile D	<u>ri</u> (/						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

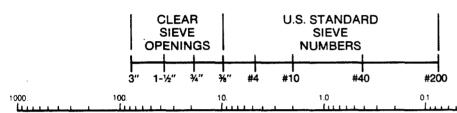
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(1)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CERT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY				
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS				
-	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY				
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS				
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS				
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS				
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS				



PROJECT NUMBE	PROJECT NAM	PROJECT NAME: Key West Remedial Investigation-Site#9								
BORING NUMBER	COORDINATES	COORDINATES: N/A					DATE: 6/6/90			
ELEVATION: 61		GWL: Depth 5,5 Date/Time 6/6/90-15:09								
ENGINEER/GEOLG		Depth N/A Date/Time N/A			PAGE OF PAGE					
DRILLING METHODS Standard Fenetration Test / Soil Boring								IPA	3E /	OF' / '
DEPTH (Ft.) SAMPLE TYPE & NO. BLOWS ON	SAMPLER PER ((6 ") ((6 ") RECOVERY ()		DESCRIPTION	,		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REM/	ARKS Organic Vapor (Ppn:)
[] [] '	29 MA 1 8 7	Limesto	ne fill			N/A	H/A	NA	15:09	
2-4	5 to 50 to 5		ione fi							
SPACE	3 an an an	4'-5'- Lini E'-6'-Lime 51/ty			ated				15:13	1200 Ppm
NOTES:			J 3000							
Drilling Contractor Drilling Equipment Driller:	Drill Ford n + A	ing Solut F-700 Min IEX	bile Dri	/)						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

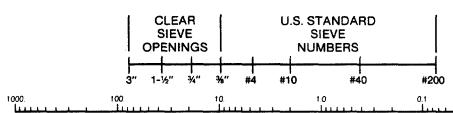
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

5000 55	GRAVEL		SAND			
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



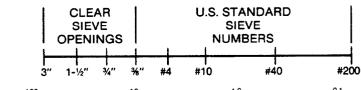
PROJECT NUMBER: 595392	PROJECT NAME: Key West Remedial _niest gion Site 9					
BORING NUMBER: 3 - 36	COORDINATES:	DATE: 676/90				
ELEVATION: 6,61	GWL: Depth 4,0 Date/Time	B 5/0/90 - /4:50	DATE STARTED: 6	16195		
ENGINEER/GEOLOGIST: 6, 5+ cohens	Depth A/A Date/Time	9 ′ <i>N/A</i>	DATE COMPLETED:	6/0/93		
DRILLING METHODS: Standard Pe	netration Test Su	oil Boring	PAGE	of /		
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER ((' ') RECOVERY ()	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	CONSTRUCTION THE	RKS Organic Vapor Bom		
0-2 7 5	one fill	N/A N/A	14:50	35 ppm _		
	one fill			-		
Limesto	ne, silty		14:50	0 ppm -		
END of						
Drilling Contractor Drilling Solution Drilling Equipment Ford F=700 mc Driller: Kevin + Alex	obile Drill					

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾				
VERY LOOSE	0 - 4 5 - 10				
LOOSE					
MEDIUM DENSE	11 - 30				
DENSE	31 - 50				
VERY DENSE	OVER 50				

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



1000. 100. 10 10 0.1 0.01 0.001 0.0001

GRAIN SIZE IN MM

COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	SIET NIED SENT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
CLEAN SANDS (LITTLE OR NO FINES)	SW SP	GRAVELLY SANDS,
		GRAVELLY SANDS, LITTLE OR NO FINES POORLY-GRADED SANDS, GRAVELLY SANDS,

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



[acc :-		1DED -	-0:-	200	BRO IECT NAME: //	1.10=1	D	م : المرجم و	, , -,	anged to	·
		MBER: 5			PROJECT NAME: Key West Remedial			DA.	DATE: 6/6/90		
		BER: B	-35		GWL: Depth 4,5	Date/Time	1 11 11	34 - 111.34			
	TION: (T. (2	Stephens					DATE STARTED: 6/6/91 DATE COMPLETED: 6/6/91		
DRILL	ING MET	HODS	<u>. ح. ۱</u>	ndard res	na roadion To	est/Se		Borine			OF /
DRILL	ING ME	11000.	<u> </u>	7,0070		<u> </u>	J//		<u> </u>		
DEРТН (49₁)		BLOWS ON SAMPLER PER (6")			DESCRIPTION				WELL	REMA	irks Gradelle Vacar (Scare)
0-2	N/A	39 16 7 7	NA	Limero	ock Fill		N/A	~/A !	×/\$	14:30	100 PPM
2-4		65 43		Limero	ock fill aces of asp	oha i+		-		and Management	
46	HEND SPACE AMMERSIS	4332	V	Limesto	one, -an			¥		14:35	100 =
				END O	f Boring						- - -
											- - - - - -
	1										- - -
NOT Drillin Drillin Drille	ng Contra	ment F	rill ord A	ing Soluti F-700 Mob Lex	ion pile Drill						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

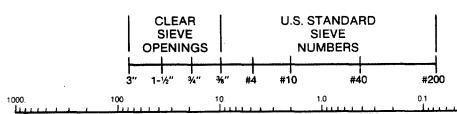
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAVEL		SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	OIL! AND SEA

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES		
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES		
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES		
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES		
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES		
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES		

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
·	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595	392	PROJECT NAME: Keu	West R	emi	edial	Inve	estination	-Site=9	
BORING NUMBER: B - 3		COORDINATES:					DATE: 6/19/90		
ELEVATION: (a.						DATE STARTED: 6/19/90			
ENGINEER/GEOLOGIST: G	r, Stephens					TE COMPLETED			
DRILLING METHODS: $5+6$	andard Tene	tration ies	+/Soil 1	<u> </u>	<u> </u>	PAG	it /	OF /	
DEPTH $(+/+,)$ SAMPLE TYPE & NO. BLOWS ON SAMPLER PER $(-L, '')$ RECOVERY (-1)		DESCRIPTION		USCS SYMBOL	CON	WELL CONSTRUCTION	rem Time	ARKS Organic Vagor (Ppm)	
- N/A 28 N/A 14 7 6	4" Asp 12" Lime 8" Lime	chalt estone fill, d estone fill, li	ark	MA	MA	v ja	17:32		
HEAD 3 SPACE 2 ANALYSIS 3		one fill, li ell fragmen		· · · · · · · · · · · · · · · · · · ·	*	¥	17:37	Чррт -	
	END 3	F BORING							
NOTES: Drilling Contractor Drilling Equipment Ford Driller: Keyin + A	lling Solu I F-700 Ma Ilex	tion obile Drill							

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

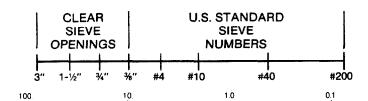
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾				
VERY LOOSE	0 - 4				
LOOSE	5 - 10				
MEDIUM DENSE	11 - 30				
DENSE	31 - 50				
VERY DENSE	OVER 50				

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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GRAIN SIZE IN MM

	GRAVEL		SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	OILI AND OCAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000.

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

TIME GITAINED/TIMETET GRAZITIO GOLEG					
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY			
	C	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS			
	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS			



PROJECT NUMBER: 595 392	PROJECT NAME: Key West ?	<u>Pemedial</u>	Investic	191/20-5/48#9
BORING NUMBER: 3.33	COORDINATES: A	DATE: 6/79/90		
ELEVATION: 6,52'		DATE STARTED: 6/19/98 DATE COMPLETED: 6/19/90		
ENGINEER/GEOLOGIST: S. Stepners DRILLING METHODS: Standard Per		1 Boring	PAGE /	OF /
DAILEING METHODS. SPANGATA TE	Tella inchi i can gon			
DEPTH (\$\frac{1}{2}\text{1},\text{1} SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (\$\mathcal{G}^{\mu}\text{1}) RECOVERY (\$\text{1},\text{2})	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS Organic Vapor (Don)
- N/A 28 NA 4"-AS, 15 9 18"-Lim	estone fill y oolites	1 1 1 1 1 1 1 1 1 1	17;	2/
SPACE 4 Limest	one fill, sandy		17:2	10 ppm
	OF BORING			
Drilling Contractor Drilling Solutions Drilling Equipment Ford F-700 miler: Keyin & Alex	phile Drill			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

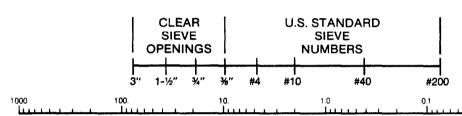
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

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GRAIN SIZE IN MM

COBBLES	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SICI AND CLAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJE	CT NUM	BER: 5	95	392	PROJECT NAME: Ke	4 West	Rem	redigi	In	vesting-	1311-51929	
BORIN	G NUME	BER: B	-32		COORDINATES: 1/7	<			DA.	DATE: 6/79/90		
ELEVA	TION:	6.27	1/		GWL: Depth 3'4"					DATE STARTED: 6/19/90		
ENGIN	EER/GE	OLOGIS	, ځک :T	Stephens					DATE COMPLETED: 6/19/90			
DRILLI	NG MET	HODS:	54	andard Pe	enetration T	es+/50/	100	011115	PA	GE /	OF'/	
DEPTH (行 ,)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 ')	RECOVERY ()	·	DESCRIPTION	,	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	ren Time	Organic Vapor Vapor	
- - - 0-2	N/A HEAD	15 8 7 5	N/A	6"-2'-L	Asphalt Imestone Fil Colitie	ll, light	NA	~/~	~ <u>/</u> A	17:00		
2-4_	SPACE	5 7 3 4	··	Limes: w/ooi	tone, lightlites	+		. ~		17:15	12 ppm -	
	es:				f BORING							
Drillin Drillin	g Contra g Equipr	nent E	oro	ling Solu F-700 n Hex	tion nobile Drill						. •	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

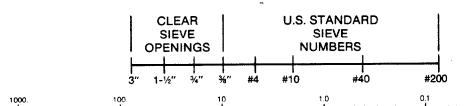
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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GRAIN SIZE IN MM

COBBLES	GRAV	/EL	SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	JEF RIND JEAN

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW ·	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH F!NES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



				71007.2							
PROJECT	T NUM	BER: 5	-95-	392	PROJECT NAME: K		<u>Peni</u>	edial.		<u>estigati</u>	111. S19
BORING I					COORDINATES: 14/				DA ⁻		190
ELEVATIO		6,35	7		GWL: Depth 3'/0"	<u> </u>					6/19/93
ENGINEE	ER/GE	OLOGIS.	T: G ,	Stephens	Depth N/A						D: 19/99
DRILLING	3 MET	HODS:	<u>5+0</u>	andard Pen	netration 7	Test/Soil	50	oring	PAC	GE /	Of /
DEPTH (子),) SAMPLE		BLOWS ON SAMPLER PER (6'')	RECOVERY ()		DESCRIPTION	,		MEASURED CONSISTENCY (TSF)		re Time	MARKS Organic Vaper (Ppm)
0-2	LEAD PACE	3383774	M/A	2'-3'- Lim	phalt lestone fi gnt/gray lestone fill		NA	N/A	N, &	17;45	_
	NALY51.	(S - (S)	. 😽	3'- 3'2" As;	phait imestane f politic	-51/	\ \ \		\	17:55	3ppm]
NOTES:				END	of Borin	l G-					
Drilling (Drilling E Driller:	Contrac Equipn Ke	rent F	ord 4A	ling Solu F-700 mg lex	tion obile Drill						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

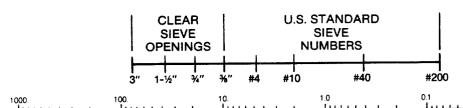
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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GRAIN SIZE IN MM

	GRAV	/EL		SAND		SILT AND CLAY
COBBLES		CIAIC	COARCE	MEDIUM	EINE	OIE. AND OET

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	FINE-GRAINED/HIGHET ONGANIO GOILO				
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY			
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS			
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS			



PROJECT NUMBER: 5953	92 PROJECT NAME: Key Wes	t Remedial	Inve	Stiration	1-5,7519
BORING NUMBER: B-30	COORDINATES: 1/4		DATE: 6/21/90		
ELEVATION: 6,4'	GWL: Depth 3'4" Date/	Time 6/3//90-9:2 Time N/A	8 DATE	STARTED:	121/90
ENGINEER/GEOLOGIST: 6.	Stephens Depth N/A Date/1	oring	PAGE	COMPLETED	OF /
			z		
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6") RECOVERY (1)	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	WELL	REM/ Time	ARKS Ongaric Volper
TOC 17 1	2"- Top Soil "10"- Limestone Fill	PT WA	**	9:28	
10 SPACE 7 - ANALYSO 6	Limestone Fill w/ shells			· · · · · · · · · · · · · · · · · · ·	45ppm -
N/A 7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Limestone Fill syshells			10:00	
	END OF BORING				- - - - - - - -
NOTES: Drilling Contractor Drill Drilling Equipment Ford Driller: Kevin + Alex	ing Solution F-700 Mobile Drill				-

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

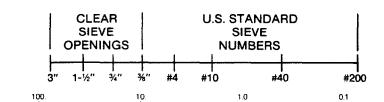
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES GRAVEL SAND SILT AND CLAY

COARSE FINE COARSE MEDIUM FINE

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
GRAVELS WITH F!NES	GМ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES					
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
SANDS WITH FINES	SM	SILTY SANDS. SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES					

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	Ċ	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	Ö	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595	392	PROJECT NAME: Key	West R	en	ea.a/	از ا/ر مند -	25+ -277,	11. Just 9
BORING NUMBER: B-2		COORDINATES: N/A				DA		
ELEVATION: 6,1		GWL: Depth 4'	Date/Time		90-10:4		TE STARTED:	210,93
ENGINEER/GEOLOGIST: 6, DRILLING METHODS:		Depth N/A	Date/Time	$-\kappa$	garing		TE COMPLETE	D: / ₀ / クラ OF /
DHILLING METHODS:	majord Fr	ne manan se	51/20.	// (
DEPTH (47.) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6.") RECOVERY (1)		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	ner Time	MARKS Organic Voices
0-2 8 8	0-1'- Top 1'-2' - Fill,	Soil limy w/shells		NA	NÃ	N/A	i0:40	Oppm -
- HEAD 6 SPACE 4 - AMALYSIS 2 2-4 1	Fill, lin W	Shells		<u>\</u>		· · · · · · · · · · · · · · · · · · ·	10;50	0 ppm -
NOTES: Drilling Contractor Drilling Equipment Ford Driller: Kevin A	lling So	bile Drill						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

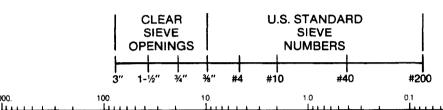
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

0000150	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GΜ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	РТ	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595 392	PROJECT NAME: Key West	Remedial		
BORING NUMBER: B-28	GWL: Depth 5,5' Date/Time	DATE: 676/90 DATE STARTED: 6/6/90		
ELEVATION: 7,9% ENGINEER/GEOLOGIST: 6, 5tephens	Depth N/A Date/Time	6/490-10:30 N/A		LETED: (2/ 0/90
DRILLING METHODS: Standard 20	1 / 1/11	/ • /		OF /
Different Methods. Spentifer is	1,000			
DEPTH $(\frac{f}{f}, 1)$ SAMPLE TYPE & NO. BLOWS ON SAMPLER PER ($6^{\prime\prime}$) RECOVERY (1)	DESCRIPTION	USC: OON	WELL CONSTRUCTION	REMARKS Onganic Via Soffinia
- N/4 10 M/4 6-1'- Top 11 1'-2'- Lime	Soil estone Fill	PT NJA	10:	30 Oppni -
$\begin{bmatrix} 2-4 \end{bmatrix} $ $\begin{bmatrix} 5\\3 \end{bmatrix}$	one fill w/Asphalt			Oppm -
HEAD 8 SPACE 8 ANALYSID 8 Limestor 4-6 5	ne Fill, Silty		10:2	35 Oppm =
	F ZORING			
NOTES: Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 Mod Driller: Kevin + 2/ex	tion oile Drill			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

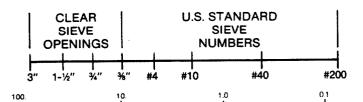
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

-						
	GRAV	EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GΜ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CI EAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

FINE-GRAINED/HIGHLY ORGANIC SOILS			
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS	
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	



PROJECT NUMBER: 595	392 PROJECT NAME: Key Wes	t Remedial Inu	lestination-Site=9	
BORING NUMBER: 8-27	COORDINATES: WA	·/T!	DATE: 6/6/90 DATE STARTED: 6/6/90	
ELEVATION: 6,7'	Stephens Depth M/A Date	GWL: Depth 5'7" Date/Time 6/6/90-10:05 Depth N/A Date/Time N/A		
ENGINEER/GEOLOGIST: 6,	ndard Penetration Test/S		PAGE / OF /	
	magra continuition edige			
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6 ") RECOVERY ()	, DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	Time (apaspor)	
- N/4 6 N/4 - 18 18	Colitic Limestone Fi		10105 Oppm -	
2-4 / 5	Limestone Fill w/glass, politics		Oppm-	
#EAD 14 = 14 = 14 = 16 = 17 4-6	4-51-Various Fill 51-6- Asphalt layer		10:20 400 PPM	
NOTES: Drilling Contractor Drilling Equipment Ford Driller: Keuin A	ling Solution -700 Mobile Drill			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

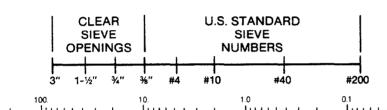
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAVEL		SAND			SILT AND CLAY		
COBBLES	COARSE	FINE	COARSE	COARSE MEDIUM FINE		SILI AND CEAT		

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595392	PROJECT NAME: Key West A	en e	dial_	NJE	Stication -	5/70= 9	
BORING NUMBER: B-26	COORDINATES: NA				TE: 6/6/90		
ELEVATION: 5,4'	GWL: Depth Date/Time	ime 6/6/90-9:51			DATE STARTED: 6/6/90		
ENGINEER/GEOLOGIST: G. Stephens	Depth NA Date/Time	/ ~ !		DATE COMPLETED: 6/9/PAGE / OF /		6/6/90	
DRILLING METHODS Standard Pene	tration Test/Soil i	<u>Bori</u>	<u>va</u>	IPA	GE /	OF /	
SAN SAN BLOW SAMPL (6 6 6 6 6 6 6 6 6 6	DESCRIPTION	\bot	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMA	Organik Vapor Vapor (Ppm)	
14 0-1'- Top 13 10 1-2'- Top	Soil mixed Silty Limestone, shelb	PT			9:51	Орот -]	
- SPACE 3 2'-3'-511+	Limestone mudiclay, sand, sitt	MA	\	\	9:53	Oppm =	
END 3	+ BORING						
Drilling Contractor Drilling Solut Drilling Equipment Ford F-700 Mobi Driller: Kevin + Alex	ion le Drill						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

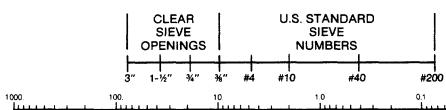
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DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY. GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595 392	PROJECT NAME: Key West Ke	emedial I	nuestination-Jire?	2
BORING NUMBER: B-25	COORDINATES: N/A		DATE: 6/6/90	4
ELEVATION: 5,6'		6/6/90-9:55	DATE STARTED: 6/6/90	_
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time	, , , // -	PAGE / OF /	\dashv
DRILLING METHODS: Standard Pen	etration Test/Soil			ᆿ
DEPTH (44,) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6") RECOVERY ()	DESCRIPTION		REMARKS Organic Vapor Vapor Per	,
M/A 5 N/A 4 4 Top Soi	1	PI N/A	9155 Oppm	1 1 1
Lime r Clayey,	nud sandy, silt	MA	10:00 Oppm	
NOTES: Drilling Contractor Drilling Soluti Drilling Equipment Foral F-700 Mobil Driller: Kevin + Alex	of BORING on Re Drill			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

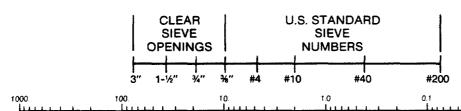
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DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

2000:50	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	SC	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595392	PROJECT NAME: Key West Ro	emedia/Inv	estigation-S	ite#9
BORING NUMBER: B-24	COORDINATES: A		DATE: 6/21/90)
ELEVATION: 7,5'	GWL: Depth 4/ Date/Time	6/21/90-1225	DATE STARTED: 4	121/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time		DATE COMPLETED:	
DRILLING METHODS: Standard Pen	etration Test/Soin	Borina		OF /
			·	
SAM SAMPLU (C C C C C C C C C C C C C C C C C C	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)		organie Vapor Vapor
M/A 25 MA 1"- 700 S	Soil	PT NA	~ <i>/</i> A	
50 11- Loose 23 1' - Conso	limestone fill lidated limestone fill whole shell	<i>M</i> /*	12:25	
10 w/w	idated limestone fill hole shell limestone wy petroleum tone Fill sand, mostlysh	<i>:</i>	12:35	3ppm _
END C	of Boring			
				- - - -
				- - - -
				- - -
				-
				- - -
F -			ľ	1
NOTES: Drilling Contractor Drilling Solut Drilling Equipment Ford F-700 Mobiler: Kevin + Alex	ion ile Drill	<u> </u>		

0.0001

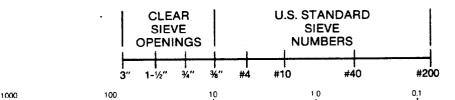
CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



GRAIN SIZE IN MM

_	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	3.27.11.0 3.11

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

THAT-GUARINED/THOUSE OF GARAGE COLO			
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
	ÖL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS	
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY. ORGANIC SILTS	
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	



PROJECT NUMBER: 595 392	PROJECT NAME: Key Wast R	emedial I	nuestigation-S	14=#9
BORING NUMBER: B-23	COORDINATES: NA		DATE: 6/21/9	
ELEVATION: 8,2		6/21/90-12:15		121/90
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time	N/A	DATE COMPLETED	6/21/90
DRILLING METHODS: Standard Pe	netration Test/50	il Borins	PAGE /	OF'
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER ((((()))) RECOVERY ()	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	MEHL CONSTRUCTION	Organic Vapor Vapor
0-2 15 11" - Light	ble Limestone Fill Limestone fill shells	PT N/A	12:15	
- Light	imestone fill shell	Y	12:25	3 ppm -
END O	f BORING			
NOTES:	00			
Drilling Contractor Drilling Soluti Drilling Equipment Ford F-700 Mobi Driller: Kevin + Alex	le Drill			

30.13.3.				
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)			
VERY SOFT	LESS THAN 0.25			
SOFT	0.25 to 0.50			
FIRM	0.50 to 2.0			
HARD	2.0 to 4.0			
VERY HARD	MORE THAN 4.0			

DENSITY OF GRANULAR SOILS

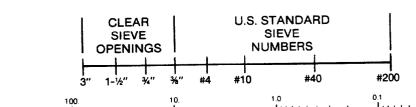
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DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001



GRAIN SIZE IN MM

								
	GRAVEL		SAND			SILT AND CLAY		
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE			

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000.

00/4/02								
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES						
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES						
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES						
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES						
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES						
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES						
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES						
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES						

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595 392 PROJECT NAME: Red West Schiledial Investigation - Site = 9						-Site=9	
BORING NUMBER: 3-12	COORDINATES: N/X			DAT	DATE: 6/21/90		
ELEVATION: 6.6	GWL: Depth 4' Date/Time6/21/90-/2:00			DATE STARTED: 5,21/90			
ENGINEER/GEOLOGIST: G. Stephens	Depth N/A Date/Time				DATE COMPLETED: 6/21/90		
DRILLING METHODS: Standard Pen				PAC		OF /	
DEPTH (f.) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6 '') RECOVERY ()	DESCRIPTION	<u> </u>	COM	WELL CONSTRUCTION	rei Time	MARKS Organic Valencia	
N/A 20 MA 2"-Top	Soil	P7	M/A A	V/4		_	
		N4	1		10100		
	restone fill, hard	'',''			12100		
[02] V 10 San	dy w/ shells					7	
HEAD 7						25	
	one fill, hard					PPM	
	•				12:10	OVA 7	
2-4 3 4 3900	dy w/shelis				ı		
F ²⁻¹ +	SE BORING			~			
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NOTES:					<u> </u>		
Drilling Contractor Drilling Sour	120						
Ford F-700 COM	hile Drill						
Drilling Equipment 1 31 4 15 100 1 1102	Drilling Equipment Ford F-700 Mobile Drill						
Driller: Keuin + Liex							
	,					,	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

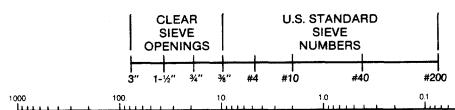
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

SAND SILT AND CLAY

0.01

COBBLES COARSE FINE COARSE MEDIUM FINE

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

GRAVEL

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJE	CT NUA	MBER: ♂	-95	392	PROJECT NAME: K	Pulwest P	en ee	lial In	vest	1907/3n-S	17 c= 9
				<i>J 1 &</i>	COORDINATES: 1				DA		
BORING NUMBER: B-21 ELEVATION: 6.7'			GWL: Depth 4'	Date/Time	6/21/	90-11/43	$\overline{}$	TE STARTED:	6/21/90		
ENGIN	FER/GE	OLOGIS	T: (\$	Stephens		Date/Time		7			D: 6/21/90
				ndara Pen		5+/5011		ring	PA		OF /
011100	110 1112	11,000.	<u>J 744</u>	7) 5(5) 5) . (7)	7:101 1011 10			· ///			
ОЕРТН (- Հ -Հ.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	re Time	MARKS Organic Vapogonij
	N/A	18 34 36 27	N/A		oSoil nestonefill caer limestone		1 !			11:45	
	HEAD SPACE ANALYS	4 7 W 5	×		limestone shells		V	¥	V	11:55	DPM OVA
NOTE	=S:				of Borin						
Drillin Drillin	g Contra g Equipi	ment F	riii ora 4 A	179 John 18-700 M 1ex	tion obile Drill						

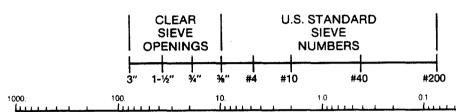
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.0001



GRAIN SIZE IN MM

	GRAV	ÆL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SIET AND CERT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

THE GHAMEDATIONED TO COLOR							
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY					
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS					
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY					
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS					
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS					
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS					
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS					



PROJECT NUMBER: 595 392	PROJECT NAME: KCY	WestRen	redial_	Ini	iest igation	1-514049	
BORING NUMBER: B-20	COORDINATES: N/A DATE: 6/2//				90		
ELEVATION: 6,5' ENGINEER/GEOLOGIST: 6, 5+e phens	GWL: Depth 3,5" Date/Time 6/21/90 - 10.36 Depth N/4 Date/Time N/A				DATE STARTED: 6/2//90 DATE COMPLETED: 6/2//90		
	enetration ?	es+/Soi	/ Baring			OF /	
			ΤΥ				
DEPTH (\(\frac{1}{4}, \) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (\(\(\(\(\(\(\(\) \) \) \)) RECOVERY ()	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	ren Tinje	MARKS Organic VapeSpm)	
14 10 1/10"- Lime	Soil stone fill	P			10:36	- -	
14 Limeston 3 W/ S	one f.11 shelb			¥	10:45	1200 _ ppm _ OVA -	
END	F BORING				•		
Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 minus Driller: Kevin + Alex	ile Drill					·	

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
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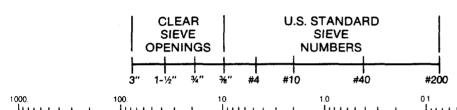
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾				
VERY LOOSE	0-4				
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0.001

0.0001



GRAIN SIZE IN MM

 COBBLES
 GRAVEL
 SAND
 SILT AND CLAY

 COARSE
 FINE
 COARSE
 MEDIUM
 FINE

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES					
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES					

FINE-GRAINED/HIGHLY ORGANIC SOILS

•	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	MH INORGANIC SILTS, MICACEOUS OR DIATOMACEO FINE SANDY OR SILTY SOILS		
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	



200 15	PROJECT NUMBER: 595392 PROJECT NAME: Key West Remedia Linvestication Site#9										
	G NUME		95 3-19		COORDINATES: NA DATE: 6/21/90					0017E -1	
ELEVAT		7.8'			GWL: Depth 5, 5' Date/Time 6/31/90-10:10 DATE STARTED: 6/21/9					121/90	
ENGINEER/GEOLOGIST: G. Stephens					Depth N/A						121/90
DRILLII	DRILLING METHODS: Standard Penetration Test/Soil Boring PAGE / OF /										
DEPTH (、好)		BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REM.	ARKS Organie Valperaphi)
6-2	NA	8 7 8 9	N/A	1'10"-Lime	estone Fil	/	N/A	N/A	~ <u>/</u> A	10:10	
2-4		7 555		3'-4' - Lime	stone fill stone fill sandy						_
ᅡ ‡	HEAD SPALE Analysi	5 43	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Limes Silty, s Whole	stone Fill Sandy Shelb	· www. www.co.co.co.co.co.co.co.co.co.co.co.co.co.				10:20	280 Ppm OV=
	ES:				BORING						-
Drilling Driller:) Contra) Equipm : K.C.	ment Fo	<u>nn</u> <u>prd</u> <u>Al</u>	ing Solutie F-700 Mobi ex	ile Drill						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

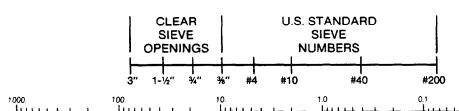
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾				
VERY LOOSE	0 - 4				
LOOSE	5 - 10				
MEDIUM DENSE	11 - 30				
DENSE	31 - 50				
VERY DENSE	OVER 50				

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

00001.55	GRA	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

		WELL-GRADED GRAVELS.
CLEAN GRAVELS	GW	GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GΜ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



						, ,				<u> </u>		
PROJECT				392	PROJECT NAME: Ke	y West	2017	المن المن المن المن المن المن المن المن				
BORING N			-18		COORDINATES:			,	DA	TE: 5730/	90	
ELEVATIO		3.1'			GWL: Depth 5 Date/Time 5/30/90 - 18:30					DATE STARTED: 5/30/90 DATE COMPLETED: 5/30/90		
ENGINEER	₹/GEC	DLOGIS	<u>T: C.</u>	Callagari	Depth N/A	Date/Time	/ Y./*		DA			
DRILLING	METH	HODS:	<u> </u>	ndary Feni	ciration is	57/5011	1 00	ormg	PA	GE /	OF' / '	
DEPTH (47.)	TYPE & NO.	BLOWS ON SAMPLER PER $(\boldsymbol{b}^{(t)})$			DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	ren Time	ianks Onganie Volgenjajam)	
0-2	/A	0 e 4 la	NA	Limesto Gravel,			N/A	NA	N/A	18;30	-	
		915 4 8		Limesto Gravel,	,						-	
4-6 4-6		m- 69	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Lime m Sandw/m Finegrains	inor shell ed sand, mod	erately orted		:	V	18:135	2,800 - ppm -	
NOTES:				End of						•	-	
Drilling Co	ontract quipme	tor DI ent S	rill Tik	ing Solut mco 2800 e	10n							

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

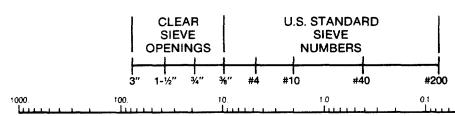
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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GRAIN SIZE IN MM

CORRI ES	GRAV	/EL		SAND	•	SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SICI AND GEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJE	CT NUM	BER: A	TOK	392	PROJECT NAME: Ke	u West	Ren	redia l	In	vestiant.	ion-Site#9			
	G NUME		3-17								DATE: 5/30/90			
	TION:		<u>، ر ر</u>		GWL: Depth 6	Date/Time	5/30	70-18:05	DA					
ENGIN	EER/GE	OLOGIS	T: (¹,	Callagari	Depth N/A Date/Time N/A			7.			D: 5 /30/90			
DRILLI	NG MET	HODS:	5+0	indard Per	netration	TC5+/5	oi/ '	Borin	S PA	GE /	OF /			
БЕРТН (-f 7.)		BLOWS ON SAMPLER PER (6 '')	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REN Time	MARKS Organic Vaposporni			
0-2	NA	5551	N/A		tone Fill		NA	M/A	NA	18:05	_			
ا ا ا ا		36 13 25 24			Oolite y,+limestoi	ne mix	a and a second		÷					
4-6	HEAD 57ACE ANALYSIS	14 10 9 8		Limesto	one				- : - : - : - : - : - :	18:12	2,200 - PPM1 -			
					F BOPING						-			
NOT Drillir Drillir Drille	ES: ng Contra ng Equipr r: Eo	ment S	ril	ling Solu mco 2800 e	tion									

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY, HARD	MORE THAN 4.0

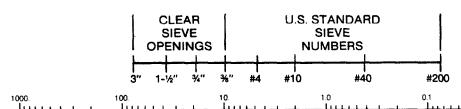
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾				
VERY LOOSE	0 - 4				
LOOSE	5 - 10				
MEDIUM DENSE	11 - 30				
DENSE	31 - 50				
VERY DENSE	OVER 50				

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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GRAIN SIZE IN MM

COBBLES	GRAV	/EL	SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	SIEI AND CEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595-392	PROJECT NAME: Rey West	Rem	ediai.		esti 00113	11-S1-e#9		
BORING NUMBER: 3-16	COORDINATES: 1//2			DA	DATE: 5/30/90			
ELEVATION: 8.0'		e <i>5/30</i>	190-17:5	DA G	DATE STARTED: 5/30/90			
ENGINEER/GEOLOGIST: C. Callagari	Depth N/A Date/Tim				TE COMPLETED			
DRILLING METHODS: Standard Per	etration Test Soil	00		PA	GE /	OF /		
DEPTH (++) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (RECOVERY ()	DESCRIPTION	USCS SYMBOL		WELL CONSTRUCTION	REM. Time	ARKS Crganic Vapor(Spm)		
- N/A 4 N/A Limeste	one+Gravel Fill	MA	N/A	MA	17:50	-		
14 2:3'- Limes	Stone+Gravel Fill Limestone, shell mud							
10 6 Lime	mud							
Lime	mud				17:55	2700 - PPM - OVA -		
ENDO	F BORING					-		
NOTES: Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 mobile Drill Driller: Ed + Mike								

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

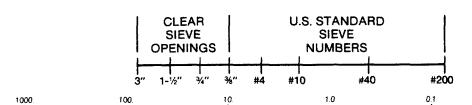
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
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(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

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GRAIN SIZE IN MM

COBBLES	GRAV	/EL	SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	3E1 AND 3EA1

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



					PROJECT NAME: Key West Remedial Investigation-Site #9							
BORING N			-15		COORDINATES: NA					TE: 5-/30/		
ELEVATIO	N:	8.9	- 1	(1-11						ATE STARTED: 5/30/90 ATE COMPLETED: 5/30/90		
DRILLING	R/GEC	HODS	$\frac{1:C_{1}}{C_{2}}$	Callagari	Depth N/A netration Te			OFINE			OF /	
DITIELING	1	1000.	<u> </u>	naura rei	ierrarion re	<u> </u>		-				
DEPTH (+/+,) SAMPLE	TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()	·	DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	ren Time	MARKS Organic Vapor (PPM)	
0-2	/A	4 10 11 16	M/A		ill of Lime hed Blue St	STONE	74/4	<i>>></i> / 4	≯	17:15	-	
2 -4		28 13 84	The company of the co		il of Lime. hed 30e S							
4-6		G1 = 12 W			11 of Limined 210e Ste						_	
T 324	ead ice ilys/s	ななコゴ	· · · · · · · · · · · · · · · · · · ·	concentr 2-5mm	nted		\ \ \	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		17:20	3,500 - ppm - OVA -	
NOTES:					F BORING							
Drilling Co	contrac cquipm	etor Director Street	rili ein FEC	ling Solu	<u>tion</u>							

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
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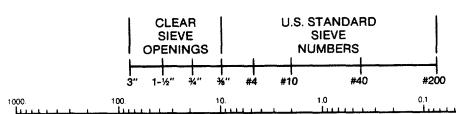
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
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LOOSE	5 - 10
MEDIUM DENSE	11 - 30
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0.001

0.0001



GRAIN SIZE IN MM

	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	3377,113

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJEC	PROJECT NUMBER: 595 392 PROJECT NAME: Key West Romedial Injesting 1, 1/2 Site=9												
BORING	NUME	BER: 2-	14		COORDINATES: 1/22				DA	DATE: 5/30/20			
ELEVAT	ION: {	ŝ. '								DA	DATE STARTED: ケノ3つ/テン		
ENGINE	ER/GE	OLOGIS	т: С.	Callagari	Depth N/△ Date/Time N/→				DATE COMPLETED: 5-130 HO				
DRILLIN	IG MET	HODS:	5+0	ndard Pene	400 7 OA	755	- / Soil	1 B	orine	PA		OF /	
DEРТН (九)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (β'')	RECOVERY ()		DESCRIPTION			USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	re Time	MARKS Organie Valor (ppm)	
0-2	×/*	\$ 7 10 H	*	Limes	Ctone	F.11		<i>x</i>	NIA	₹	.14140	-	
2-4		7 87		Lime.	stane	7.11			:			-	
4-6	V	13-83	The second secon	Limen Minor Swam	sand p/ odor		dshe li	***********				- -	
T =	PRE	١		Light to		wn 		: : :			14:46	1,000 - P,0m - OVA -	
NOTES	3:				7 20 <i>21</i> 1	VG							
Drilling Drilling	Contrac	ent S	rill Ca	ina Solu-, nico 2800 .ke	<u>Sh</u>								

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

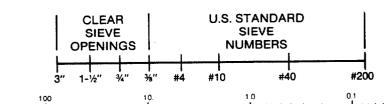
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(1)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

٦	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	GICI AND GEV.

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS. GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595 392 PROJECT NAME: Key West Remedial Injection - 51+2 9 BORING NUMBER: 8-13 COORDINATES: NX DATE: 5/30/90									
ELEVATION: 6,8'		5/30/90	30/90 DATE STARTED: 5/30/90						
ENGINEER/GEOLOGIST: C. Callagari	Depth NA Date/Time	NA	DA	TE COMPLETE	5 /30/90				
DRILLING METHODS: 5+2 ndana Pen	etimition Test/Soil	Borin	5 PA	GE /	OF /				
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6") RECOVERY ()	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY	WELL CONSTRUCTION	ren Tinie	Organie Vapor Vapor (pom)				
0-2 N/A 6 MA Limeste	ine Fili	up up	NA	14:05					
18 12 8 5 Limeste	one fill								
Limeston Clay is 2r	e w/somelime mud ay white, charey, cost	V		14:11	250 ppm 0VA				
NOTES	- BORING								
Drilling Contractor Drilling Solut Drilling Equipment Seamco 2800 Driller: Ea + Mike				~					

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

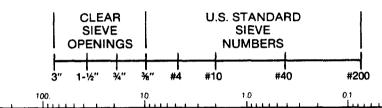
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

-	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SICI AND OCK

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJE	CT NUM	MBER: 4	795	392	PROJECT NA	ME: Krain	est P	ر در در در	enio i	Tn 1=	Stira-121 -	540	
	IG NUMI		-15		COORDINATI	ES: N/X					DATE: 5/30/90		
ELEVA		7′			GWL: Depth			5/3q	90-151		DATE STARTED: 5/30/90		
ENGIN	IEER/GE	OLOGIS	T: (',	Callagari	Depth NA Date/Time NA								
DRILL	ING ME	HODS: \	<u> </u>	rdard Te	<u>gernos,</u>	<u>57 . CS</u>	7/501	/ [Borine] IPA	aE /	OF /	
DEPTH (千,)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ((6")	RECOVERY ()		DESCRIPTION		·		MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REM/	organic vapor vapor ppm	
0-2	MA	ય જા ઼ુ∞	×/*	Limeston	ne fill	w/grav	,	rija	NA	Nysa	15:30		
2,4	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ी १० य य य		Limeston	e = ::	w/g ra	vel	:					
46	HEAD SDACE Analysis	7 m mg	· · · · · · · · · · · · · · · · · · ·	Limestone	<u>.</u> 2)	y arave	.1			· .	15;35	10ppm _ 0VA =	
 				END 0	f Bori	NG						- 	
												- - -	
												<u>-</u> -	
Drilling Driller	:S: g Contrac g Equipm : \(\frac{\chi}{\chi} \)	etor $\frac{D}{S}$	en Ed	ling Solut co 2800	ion		,						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

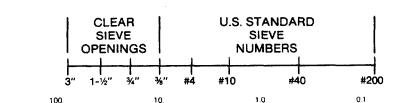
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

. 0.0001



GRAIN SIZE IN MM

_						
	GRAV	'EL		SAND	SILT AND CLAY	
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SIEI AND GEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 59,	<u>5</u> 3	92	PROJECT NAME: K	cy West R	Reme	dial I	.nv	estigation	Site#9	
BORING NUMBER: 3-1			COORDINATES: A	1/X			DA.	TE: 6721/90	<u> </u>	
ELEVATION: 7, 3'			GWL: Depth 4'	Date/Time		90-13:42	DA	DATE STARTED: 6/21/90		
ENGINEER/GEOLOGIST:	<u>G, S</u>	Stephens	Depth N/A	. Date/Time		1/4		TE COMPLETED		
DRILLING METHODS: S	tan	ndard Pene	etration Te	st/Soil	Bor	ling	PAC	3E /	OF /	
DEPTH (\$\frac{4}{7}\) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (\$\lambda''\) PECOVERY	HECOVERY ()		DESCRIPTION			CON	WELL CONSTRUCTION	rem Time	arks Organic Vapomppm	
N/A 23 ^ 22 / 11 11 / 11		1"-Top 1'11"- Lim	Soil estone fi	11,100se	3 †	NA	y/A	13:42		
HEAD 9 5720E AMELYUS 5	\ \ \		tone fill		Called and and the same			13:47	5000 - ppm OVA	
			of Borin							
NOTES: Drilling Contractor	-,11 rd A1	ing 501 F-700 M ex	obile Dri	Ì						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

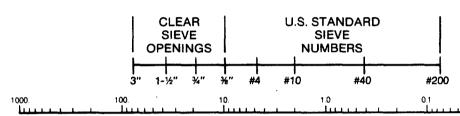
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾				
VERY LOOSE	0 - 4				
LOOSE	5 - 10				
MEDIUM DENSE	11 - 30				
DENSE	31 - 50				
VERY DENSE	OVER 50				

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CLAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	SC	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	СL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595392	PROJECT NAME: Key West Ro	emedialIr	westingation-Site#9	
BORING NUMBER: B-10	COORDINATES: N/X	DATE: 6/21/90		
ELEVATION: 6.6'	GWL: Depth 3,5 Date/Time	6/21/90-13:31	DATE STARTED: 6/21/90	
ENGINEER/GEOLOGIST: G. Stephens	Depth NA Date/Time	NA	DATE COMPLETED: 6/21/90	
DRILLING METHODS: Standard Pene	tration test/Soil	Boring	PAGE / OF' /'	
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6 ") RECOVERY (1)	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	NOLLONUS REMARKS Crganic Vaposami Vaposami Vaposami	
0-2 17 Wgras ===================================	stone fill, loose ss, coal, shell fragment tone fill, loose iss, coal, shell fragment stone fill	X	13:31 13:38 3ppm	
	BORING			
Drilling Contractor Drilling Soluti Drilling Equipment Ford F-700 mobi Driller: Kevin + Alex	on le Drill			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

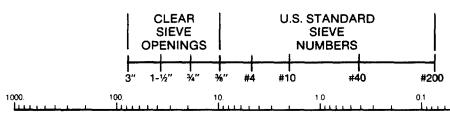
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

-	GRAV	/EL		SAND		CILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH F!NES	GМ	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



				······································		·	7					
PROJECT NU			392				West R	enic	dialJ	nve	Sticztion	
BORING NUM		-9								DATE: 6/21/90		
ELEVATION:		- .	S 1 - 1		Depth N/A Date/Time 6/21/90 - 13:20				DATE STARTED: 6/21/90 DATE COMPLETED: 6/21/90			
ENGINEER/GEOLOGIST: G. Stephens DRILLING METHODS: Standard Pene					Depth Fration		Soi/	PA		PA		OF /
DRILLING WE	THODS.	<u>) 14</u>	naura	FETTE	TICIFION	, 007	7 3077	2)6/	mg		<u> </u>	
DEPTH (-5/4.) SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()			DESCRIPTION				CON	WELL CONSTRUCTION	rei Time	WARKS Organic Vapor (ppm)
0-2 N/A	18 10 615	N/A	11 "-	Top Lime 100 Lime	Soil stone stones dark, c	Fill ric consol.		h 🛬	<i>N/4</i> .	Ny A	13:20	-
HEAD SDADE AMEVS		1			ne ws		•	, v			13:27	22 ppm _ 004 _
NOTES:			ENI) cf	BORIN	6						
Drilling Contribrilling Equip	ment 🚣	000	1 15-100	<u> 2 ma</u>	ار <u>۱۱۴۵ کا</u>	71.						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

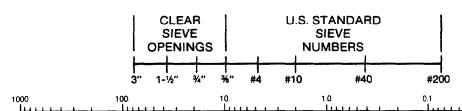
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	SIEI AND CEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

·	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595 392	PROJECT NAME: Key West R.	emedial.	Inve.	stica-ion-	Site#9	
BORING NUMBER: B - 8	COORDINATES: N/A	TE: 6/21/9	0			
ELEVATION: 6,8'	GWL: Depth 3,5' Date/Time 6/3//90 - 13/05			DATE STARTED: 6/21/90		
ENGINEER/GEOLOGIST: G, Stephens	Depth N/A Date/Time		DA			
DRILLING METHODS: Standard Pen	etration Test/Soil	1 Borin	g IPA	GE /	OF /	
DEPTH (-f-f.,) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (-6") RECOVERY (-)	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	CONS	rem Time	ARKS Organic Vapor _{ppm}	
12 10" - Lime	estone fill, loose estone fill, tightly packed	PT N/A	H/A	13:05		
HEAD 6 2'-2.5'-Lim SPACE 4 4:25'-3'-Lime 2-4 4 1'2"-Lim	estone fill, ghtly packed estone, petroleumstain estone fill, silty	, ,	Y	13:15	3700 _ ppm _ ova _	
NOTES: Drilling Contractor Drilling Solu Drilling Equipment Ford F-700 Mob Driller: Kevin & Alex	Hion ile Drill					
	·					

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

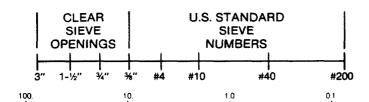
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

тТ	GRAVEL		SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595 392	PROJECT NAME: Key West F	cemealal.	Investigation-Cite#9	
BORING NUMBER: 3 - 7	COORDINATES: 1/74	DATE: しょうつ		
ELEVATION: 6,7	GWL: Depth 5,5' Date/Time	6/6/90-17:39	DATE STARTED: 6 - 25	
ENGINEER/GEOLOGIST: G. Stephens	Depth V 4 Date/Time		DATE COMPLETED: (2)	
DRILLING METHODS: Store De Te	e-rollon Test/Soi	1 Borina	PAGE 2 OF 2	
DEPTH (\$\frac{\fir}{\frac{\fir}}}}}}}{\frac{\frac{\frac{\frac{\frac{\frac{\frac{\fi	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	REMARKS Organic Vaporime	
0-2 15 13 8 Limes Clay, 50 2-4 5 41-510"-	one fill one fill nd	NA NA	17: 39	
SPACE 4 AMMUSS JULE S'10"-6'- Satistical States of the second of the			17:45 DVA	
Drilling Contractor Drilling Soluti Drilling Equipment Ford F-700 mobi Driller: Kevin + Alex	<u>le Drill</u>			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

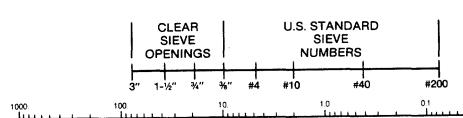
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾					
VERY LOOSE	0 - 4					
LOOSE	5 - <u>10</u>					
MEDIUM DENSE	11 - 30					
DENSE	31 - 50					
VERY DENSE	OVER 50					

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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0.0001



GRAIN SIZE IN MM

	GRAV	'EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

OOAHOL GHAMLED GOLEG							
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES					
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES					

FINE-GRAINED/HIGHLY ORGANIC SOILS

001

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



				7100/m			<u> </u>	<u> </u>				
		IBER: ర్		392	PROJECT NAME:	ج سن والد	em	eur, a /			-n - Clac= 9	
		BER: B-	-6		COORDINATES: N/2				-	DATE: 6/6/90		
	TION:									DATE STARTED: 6/6/90		
ENGIN	EER/GE	OLOGIS	T: 🚁 ,	<u> </u>	Depth U.A	Date/Time					D: 6/6/90	
DRILL	NG MET	HODS: ,	<u>S+0</u>	ndard Pen	e:ration .es	+ /Soi/	<u> </u>	ring	PAC	3E /	OF /	
DЕРТН (Ұ₁,)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER $(b, ',)$			DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	re Time	MARKS Organije Vaporijemi	
NOTE	Contra	7 8 5 0 9 5 4 9 7 3 8 8 Por		Dark 1'-2'-Lightes 2'-3'-Limes Light 3'-4'-Light Dark	stone fill estone fill stone, clayer sirty					17:25	3000 Pam 004	
				*								

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

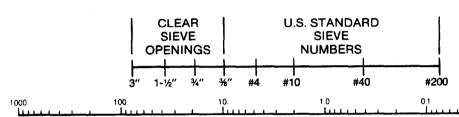
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DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	OLI AND OLA

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJE	ECT NUI	MBER: 5	-0.5	- 20.2	PROJECT NA	MF. Va.	John Pr		<u> </u>	.00.	finnier.	~ = 0
BORIN	IG NUM	BER: Z	?-5	370	COORDINATE	ES: W/A	, , , , ,	11:00	2141-11		TE: 6/6/9	
ELEVA	ATION:	7.5'			GWL: Depth		Date/Time	e 6/6/4	90-17:16		TE STARTED:	
ENGIN	IEER/GE	OLOGIS	T: 6.	Stephens	Depth	N/A	Date/Time	e 🙏	À	DA	TE COMPLETE	D: 6/6/90
DRILL	ING ME	THODS:	Sta	indard Pene	iration	Tes+,	/Soi/	<u> Bo</u>	-1119	PA	GE /	OF /
DЕРТН (<i>≨7</i> ,)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ('\omega')	RECOVERY ()		DESCRIPTION				CON	WELL	rei Time	MARKS Organis Mackatery
1 0 - 2	H/A	87754	NAT T	Limeste Light	, ,			N/A	NA	NA	17:10	_
2-7	:	1 of 9 m	2	2'-3'-Lime 3'-4'-Lime Clay, S		ill, a	•					
4-6	H F H D S PACE Jungley SIS	1 1 1	. V	Limeston Clightly a Clayey on END	ranker	N&	, e va nos — se	\ <u>\</u>	· · · · · · · · · · · · · · · · · · ·	:	17:18	5000 2277 0VA
	ES:											
Drilling Driller	Contract February Contract Feb	tor Dinent Fo	rd Ai	F-700 mob	tion ile Drill							·

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

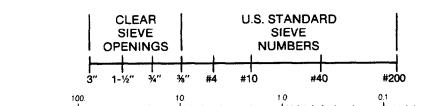
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
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(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

COBBLES	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	GILL AND SEA

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT N	NI MARER.	-0.45	201		PROJECT NAME	· <i>Va. 1</i>	105+	P.	اء ۾ ءا		Taylordia	19+1011-514-		
			<u> </u>		COORDINATES:	<u>. ΛΕΥ (</u>	ves_1	JE	MEGI					
					GWL: Depth						DATE: 6/6/90 DATE STARTED: 6/6/90			
		π· <u>/</u> 2	Stephe			Date/Time		<i>j</i> A	DA	TE COMPLETE	ED: 6/6/90			
DRILLING	METHODS:	<u>340</u>	2100/15	1) S 1) P	tration T		5011			PA		OF /		
	1		710 7711	10110		· 31 /	0011	,						
	BLOWS ON SAMPLER PER	l	WATER TO THE THE THE THE THE THE THE THE THE THE		DESCRIPTION	*****		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	CONSTRU	re Time	organic Vapor(pom		
0-2	15 10 10	*	Lim	est	one Fi	11		*	M/A	// *	16:45	-		
2-4	3 9 9 3		Lim	e 5 t	cone Fi	//				and the state of t		-		
HEA Space	ce a				estone stone		aveV				16:50	3900 - PPm -		
4-6			5-6-					1	4_	L.W.		OVA		
			E	D	of Bor	ING								
NOTES: Drilling Co	ntractor	oro	ling S 1 F-700)	nob	tion He Drill									

DENSITY OF GRANULAR SOILS

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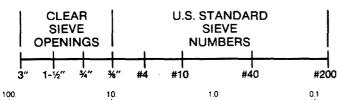
DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
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0.001

(1) STANDARD PENETRATION RESISTANCE IS THE

CONSISTENCY OF COHESIVE SOILS					
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)				
VERY SOFT	LESS THAN 0.25				
SOFT	0.25 to 0.50				
FIRM	0.50 to 2.0				
HARD	2.0 to 4.0				
VERY HARD	MORE THAN 4.0				



GRAIN SIZE IN MM

COARSE

SAND SILT AND CLAY

0.01

USCS CLASSIFICATION FOR SOILS

MEDIUM

FINE

COARSE-GRAINED SOILS

GRAVEL

FINE

COARSE

1000

COBBLES

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

HIGHLY ORGANIC SOILS	OH PT	OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS ORGANIC CLAYS
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY



PROJECT NUMBER: 595 392	PROJECT NAME: Key West I	Remeald	VIT	vestiaati	1211-514#9
BORING NUMBER: B-3	COORDINATES: NA		DATE: 676/90		
ELEVATION: 7,/'	GWL: Depth 5,5" Date/Time	6/6/90-16:	25 DA	TE STARTED:	6/6/90
ENGINEER/GEOLOGIST: G, Stephens	Depth N/A Date/Time	NIA	DA	TE COMPLETED	5: 616190
DRILLING METHODS: Standard Per	etration Test /Soi	il Boring	PA	GE /	OF'
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER ((' ') RECOVERY ()	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REM	iarks Organit
- NA 15 WA Limeste	one fill	9 2 8 NA NA	2 A/A	Time	Vapor (pom)
51/4				16:25	
	ic Limestone		1		
5 8-4 - Sand					:
F -	urated Silt		4 C	16:32	4000 ppm
4-6 2 V			V		<u> </u>
	F BORING				
Drilling Contractor Drilling Solut Drilling Equipment Ford F-700 Mo Driller: Kevin + Alex	ion bi/e Drill				

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

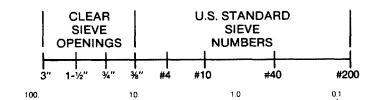
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

0000.50	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND SENT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

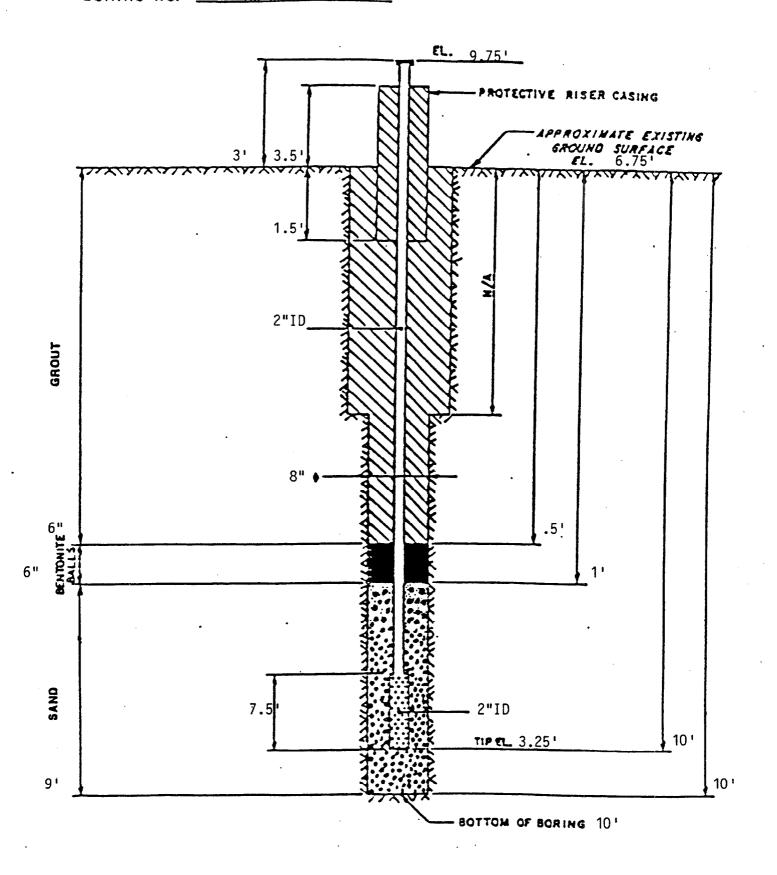
FINE-GRAINED/HIGHLY ORGANIC SOILS

11112 (311111122) 11121121 (31121111122)					
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY			
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS			
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS			



MONITOR WELL INSTALLATION SKETCH

Key West Remedial
PROJECT NAME Investigation INSTALLED BY C. Callegar DATE 5/31/90
PROJECT NO. 595392 CHECKED BY G. Stephens DATE 6/20/90
BORING NO. MW-6R





PROJECT NUMBER: 595 392	PROJECT NAME: Key West	Remedial ?	Thursdindi	10-54-9
BORING NUMBER: B-2		COORDINATES: N/A		
ELEVATION: 6,9'				
ENGINEER/GEOLOGIST: G, Steph	ens Depth N/A Date/Time	e <i>N/A</i>	DATE COMPLETED	6/6/90
DRILLING METHODS: Standard	Penetration Test/Soil	Boring	PAGE /	of 1
DEPTH (ff,) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6") RECOVERY ()	DESCRIPTION		11/11/	ARKS Organic Vapor Dpm
- 13 1'-1.5'-1 12 15-2'-1	imestone fill Dark brown silt Limestone fill	MA N/A M	16:05	-
	stone fill ic, wet			
SP406 2	ic, wet		16:10	5000 - PPM -
NOTES	of Boring			
Drilling Contractor Drilling S Drilling Equipment Ford F-700 Driller: Keuin + Alex	mobile Drill			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

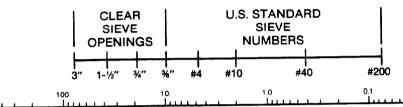
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

						The state of the s
	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000.

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS (LITTLE OR NO FINES)	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS. SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

FINE-GRAINED/HIGHET ORGANIO GOLEG					
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY			
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS			
	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS	РТ	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS			



			- ~	0.00	T550 (5)	TAIAIAT. V.)	>) annum .		= :	
PROJEC				392	PROJECT NAME: Key West Remedial Investigation-Sire#9								
BORING NUMBER: B - / ELEVATION: 7.0'						COORDINATES: N/4 GWL: Depth 5' Date/Time 6/6/90 - 15:45							
		7.0	T. C	<u> </u>		\	Date/Time	7-7		DA	TE COMPLETE	D: 6/4/90	
				Stephens		Depth N/A				PAG		OF /	
DRILLIN	IG ME	HODS:	240	ndard Pend	TRAIT	101) 1es/	10011	<u> </u>	7/19	1, 7,	GE ;		
оертн (チ)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION			USCS SYMBOL	MEASURED CONSISTENCY (TSF)	CONS	re Time	MARKS Organic Vapor(PPM)	
0-2	N/A	11 12 118	74	Limest	one	Fillw/S	heils	***	NA	**	15:45		
		1 6 4		Limeste	ne	Fill w/3	Shells					_	
† †≤	HEAD IDAGE NALYSO	3 3 2 1		Lime sto Strong o	dor	silty	- Administra		\		15:50	5000 - PPM - OVA -	
	S:)r:	LINS 500								-	
Drilling Driller:	NOTES: Drilling Contractor Drilling Solution Drilling Equipment Ford F-700 Mobile will Driller: Kevin + Alex												

	
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

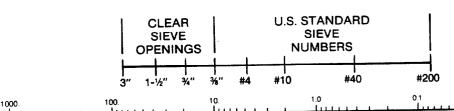
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.001

0.0001



GRAIN SIZE IN MM

-	GRAV	'EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES			
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES			
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES			
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES			
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES			
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES			
SANDS WITH FINES	SM	SILTY SANDS. SAND-SILT MIXTURES			
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES			

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
,	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedi	al Investigation	FIELD ENG./GEO.	C.Callegari	DATE 6/19/90		
PRCJECT NO. 595392		CHECKED BYG	. Stephens	DATE 9/20/90		
BORING NO. MW-6R	· · · · · · · · · · · · · · · · · · ·	DATE OF INSTALL	ATION 5/21/	00		
×2274		DATE OF INSTALL	ATION 5/31/	90		
BOREHOLE DRILLING						
DRILLING METHOD Hollow s	tem auger	TYPE OF BIT	Rock bit			
DRILLING FLUID (S) USED:		CASING SIZE (S) USED: N/A				
FLUID FROM_	TO	SIZE	FROM	TO .		
FLUIDFROM		SIZE		_то		
DESCRIPTION			•			
TYPE Sch. 40 PVC ASTM F48	0 and D170	RISER PIPE MAT	ERIAL Sch. 40 P	VC ASTM F480		
DIAMETER OF PERFORATED SE		2	IETERS:			
PERFORATION TYPE:			N/A 1. D			
SLOTS HOLES	SCREEN X	LENGTH OF PIPE				
AVERAGE SIZE OF PERFORATION	· 	JOINING METHOD				
TOTAL PERFORATED AREA		rings to seal joints.				
PROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D.		OTHER PROTECT Concrete Pad				
ITEM		BOVE/BELOW RFACE (Ft.)	ELE\	/ATION MSL)		
TOP OF RISER PIPE	. 3	.0				
GROUND SURFACE	0	.0	6.75			
BOTTOM OF PROTECTIVE PIPE	1	.5	5.25			
BOREHOLE FILL MATERIALS:						
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 0.5'	TOP 6.75	BOTTOM 6.25		
BENTONITE 3/8" Pellets	TOP 0.5'	BOTTOM 1.0	TOP 6.25	BOTTOM 5.75		
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 10.0	TOP 5.75	BOTTOM -3.25		
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A		
PERFORATED SECTION	TOP 2.5	воттом 10.0	TOP 4.25	воттом -3.25		
PIEZOMETER TIP	10.0					
BOTTOM OF BOREHOLE						
GWL AFTER INSTALLATION	N/A		N/A			
WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? REMARKS Well was developed until water was clear and sediment free. 9:15 AM. Recharge was slow, small "K" value approximately 30 gallons. Pump used was a 5 HP Briggs and Stratton with a flow rate of 1 to 2 gpm.						



PROJECT NUMBER: 595392 PROJECT NAME: Kcy West Remeals I Investigation Size 9							
BORING NUMBER: MW-6R	COORDINATES: \sqrt{A} DATE: $5/3//90$)		
ELEVATION: 9,75	GWL: Depth 3' Date/Time 5/31/90 - 8:30 DATE STA				5/31/90		
ENGINEER/GEOLOGIST: C. Callagari	Depth N/A Date/Time		DATE	COMPLETE	0:5-/31/90		
	luger / Split Spoon		PAGE		OF /		
	//		zl				
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (6") RECOVERY ()	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION		IARKS		
				Tine	. O O		
C-2 7 7 2-3-1 Mes-	vel + sand	N/A N/A	MA	8:25	- -		
Anolois 4	ONE MUT XXXXXX				10 ppm		
Limes	fone wida worste/josy				/9ss.r, =		
3 3 4 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	tone . I						
×-10	F3oring	\		7:00 			
			·		, 1		
					-		
			L_				
NOTES: Drilling Contractor Drilling Solution Drilling Equipment Ford-F-700 Mobil Driller: Tricke 4 ED	tions Note: 30 le Drill 91	entonite nd allow					

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(") STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-JNEH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18/NCHES AND THE NUMBER OF BLOWS RÉCORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE. U.S. STANDARD SIEVE **NUMBERS** #200 #40 0.0001 0.001 GRAIN SIZE IN MM SILT AND CLAY

COARSE-GRAINED SOILS

GRAVEL

COARSE

CLEAR SIEVE

OPENINGS

10.

FINE

100

COBBLES

1000

#10

COARS

MEDIUM

FINE

JUSCS CLASSIFICATION FOR SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS. GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

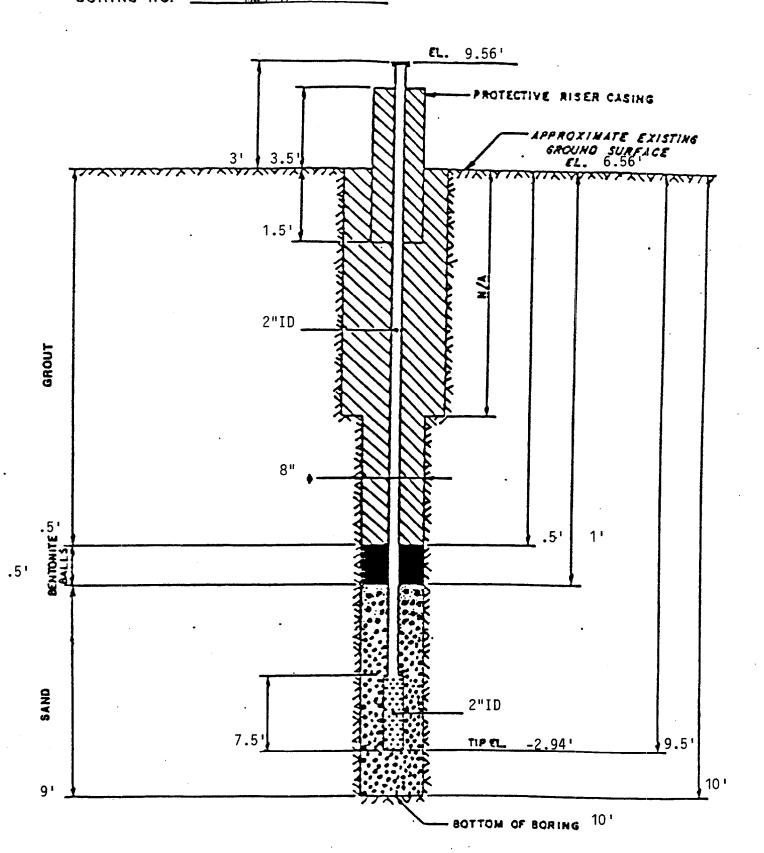
FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY			
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
	мн	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS			
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS			



MONITOR WELL INSTALLATION SKETCH

Rey West Remedial
PROJECT NAME Investigation INSTALLED 8°C. Callegari DATE 5/31/90
PROJECT NO. 595392 CHECKED BY G Stephens DATE 9/20/90
BORING NO. MW9-12





MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remed PROJECT NO. 595392	<u>ial Investigation</u>	FIELD ENG./GEO CHECKED BY G	C <u>.Callegari</u> Stephens	DATE 5/31/90		
BORING NO. MW9-12						
		DATE OF INSTAL	LATION	5/31/90		
BOREHOLE DRILLING						
DRILLING METHOD Hollow S	tem Auger	TYPE OF BIT	Rock Bit			
DRILLING FLUID (S) USED:		CASING SIZE (S) USED:	N/A		
FLUIDFROM		1	FROM	•		
FLUIDFROM		SIZE	FROM	то		
DESCRIPTION			•			
TYPE Sch. 40 PVC ASTM F	480 and D170	RISER PIPE MAT	FERIAL Sch. 40	PVC ASTM F480		
DIAMETER OF PERFORATED S		1	METERS:	1 5476		
PERFORATION TYPE:			<u>/A1.0</u>	i i		
SLOTS HOLES	SCREEN X	l .	SECTIONS			
AVERAGE SIZE OF PERFORAT		1	D Flush thread			
TOTAL PERFORATED AREA		rings to seal				
PROTECTION SYSTEM				-		
RISER PROTECTIVE PIPE LEN		3	FION Locking			
PROTECTIVE PIPE O.D.	3 3/4	Loncrete pad	2'X2'X6" meets	ASIM C150		
ITEM	DISTANCE AB	BOVE / BELOW ELEVATION (MSL)				
TOP OF RISER PIPE	2	.8	9.56			
GROUND SURFACE	0.	6.56				
BOTTOM OF PROTECTIVE PIPE	1	.5	5.06			
BOREHOLE FILL MATERIALS:						
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM .5	TOP 6.56	BOTTOM 6.06		
BENTONITE 3/8" Pellets	TOP .5	BOTTOM 1.0	TOP 6.06	BOTTOM 5.56		
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 10.0	TOP 5.56	BOTTOM -3.44		
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A		
PERFORATED SECTION	TOP 2.5	BOTTOM 10.0	TOP 4.06	BOTTOM -3.44		
PIEZOMETER TIP						
BOTTOM OF BOREHOLE	10.0	0 -3.44				
GWL AFTER INSTALLATION N/A . N/A						
S THE PIEZOMETER FLUSHED A S A SENSITIVITY TEST PERFOR MARKS After installation th water, approximately 25 g	MED ON THE PIE	ZOMETER?	YES NO NO produced silt	X and sediment from 5/31/90 at 12:4		
P.M. Pump used was a 5 HP						
1 9116 1 9116	, , , , 0					



	<u> </u>			71,007,12						·		
		IBER: 5			PROJECT NAME: K	<u>u West</u>	Ren	<u>;edin</u>	<u>/ . / . / /</u>			
		BER: /Y)	W '	9-12	COORDINATES: N				DA		1 - 400	
		<u>م ر ب</u>								DATE STARTED: 5/3/90		
ENGIN	EER/GE	OLOGIS	T:	Ca geari	نفرین Depth	Date/Time) 				D:5/3/4)	
DRILLI	NG MET	HODS:	<u> 401.</u>	low Stem A	Auger/Split	<u>3 2001</u>			PA	GE /	OF /	
DЕРТН (-√ 7 -`)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ((, ',)	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	re Tine	MARKS Onganie Vaccijani)	
6-2	N/A	557 %	N/A	Lime			2/3	N/A	*	12:20	-	
24		9 0 0		Limest	ane fin S a da 	rie!			1			
	Head Spare Amiusis	6 to 6			one very so				1		26ppm -	
	ċ			L NC Colfer	smell and Boring	7 7 0 1 7 7 7 7		······································	~	12:45	μρινη	
Drilling	Contrac	ctor Dent FD	<u>ra</u>	ing Solution						-	o resona o parate	

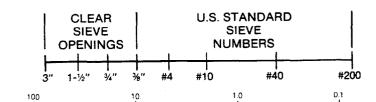
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0.0001



GRAIN SIZE IN MM

	GRAV	'EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



		MBER:		392	PROJECT NAME: Ke	West R	cm	الانتاء المنات	Inv	estication.	5/729	
		BER: B	-40		COORDINATES: X/A				DA	DATE: 6/6/90		
ENIGIA	TION:	4.20	T. , 2	Stephens	GWL: Depth 4, 5 Date/Time 6/6/90-12:35			DA	DATE STARTED: 6/6/90			
DRILL	ING MET	HODS:	3+2	rais y rener	Depth N/A		, , ,	ina	DA	TE COMPLETED	6/6/90	
					10 101 1001/	0077	7 <i>01</i>	1119		I /	UF /	
DEPTH (₹₹)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REM.	ARKS Organic Valgor (ppn)	
	NA	23 10 5	N/A	1-2'-Lime	stone fill		4/4	NA	N 1/4]	12:35		
0-2		515		ω/s	hells, dark			1	:		-	
2-4	>	1010 104 m			one Fill d +shelis,d	ark						
4-49	Head Space Apartos	かれたい		4'-5'- Lime w/so E'-6' - Lime Cia	and + shells	s,dark			· · · · · · · · · · · · · · · · · · ·	12:40	o ppm -	
ZOTE	<i>i</i>				BORING							
Drilling Drilling	Contrac	tor Dr ent For	ılli -d - Aı	ng Solution F-700 Mobilex	on ile Drill							

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES **USING A 140-POUND HAMMER FALLING FREELY** THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

SILT AND CLAY

0.001

0.0001

U.S. STANDARD **CLEAR** SIEVE SIEVE NUMBERS **OPENINGS** #10 #40 1.0 GRAIN SIZE IN MM

SAND GRAVEL COBBLES FINE COARSE MEDIUM FINE COARSE USCS CLASSIFICATION FOR SOILS

0.01

COARSE-GRAINED SOILS

1000

COARSE-GRAINED SOILS						
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES				
	sc	CLAYEY SANDS. SAND—CLAY MIXTURES				

FINE-GRAINE	D/HIG	CHLY ORGANIC SOILS
	ME	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (VESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

Site 10 Boca Chica Fire Fighting Training Area Well Construction Details
Boca Chica
Fire Fighting Training Area
Site 10
NAS Key West
Key West, Florida

	!	TOP OF	GROUND	TOTAL	LENGTH	SCREENED	1	THICKNESS OF	THICKNESS OF	THICKNESS OF
WELL	COMPLETION	CASING	SURFACE	WELL	OF	INTERVAL	SLOT	SAND	BENTONITE	GROUT
	DATE	ELEVATION	ELEVATION	DEPTH	SCREEN	ELEVATION	SIZE	PACK	SEAL	COLUMN
	1	(ft)MSL	(ft)MSL	(ft)	(ft)	(ft) MSL	(inches)	(feet)	(feet)	(feet)
			.				_	.1	l	
 Mw 10-1 	06/04/90 	3.86	3.56	11	10	 2.56 TO -7.44	0.010	11	0.5	0.5
MW 10-2	06/04/90	3.36	3.03	11	10	2.03 10 -7.97	0.010	11	0.5	0.5
MW 10-3	06/04/90	3.63	3.3	11	10	2.30 то -7.70	0.010	1 11	0.5	0.5

Topology Common



PROJECT NUMBER:	· · · · · · · · · · · · · · · · · · ·	PROJECT NAME:	· .		1		1	-
BORING NUMBER:	,	COORDINATES:	* \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			DA	ΓΕ: (-	
ELEVATION:	***	GWL: Depth	- Date/Time	5 - 1.	1.1591	~ DA	TE STARTE	
ENGINEER/GEOLOGIST:		Depth	_ Date/Time			~~	TE COMPLE	TED:
DRILLING METHODS: \ .	-1	· .	ا			PAG	GE	OF 、
			`		T	7		
DEPTH ((()) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER () RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	+	REMARKS
NOTES: Drilling Contractor Drilling Equipment	Faul		Clack Comments of the Comments				39 30 30 30 30 30 30 30 30 30 30 30 30 30	
Driller:								

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)				
VERY SOFT	LESS THAN 0.25				
SOFT	0.25 to 0.50				
FIRM	0.50 to 2.0				
HARD	2.0 to 4.0				
VERY HARD	MORE THAN 4.0				

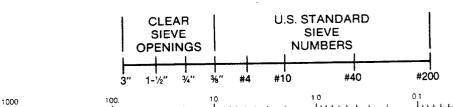
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0 001

0 0001



GRAIN SIZE IN MM

	GRAV	ÆL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS. GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remed PROJECT NO. 595392 BORING NO. MW10-1	lial Investigatio	PRIELD ENG./GEO CHECKED BY DATE OF INSTALI	M. Hampton	DATE 9/20/90
BOREHOLE DRILLING		DATE OF INSTAL		
DRILLING METHOD Hollow DRILLING FLUID (S) USED: FLUID FROM FLUID FROM	N/A TO	TYPE OF BIT_ CASING SIZE (S) SIZE_ SIZE_	USED: N/A	TO
DESCRIPTION				
TYPE Sch. 40 PVC ASTM DIAMETER OF PERFORATED S PERFORATION TYPE: SLOTS HOLES AVERAGE SIZE OF PERFORAT TOTAL PERFORATED AREA	SCREEN X	RISER PIPE MATERIAL Sch. 40 PVC ASTM F480 RISER PIPE DIAMETERS: and D170 O.DN/AI.D2" LENGTH OF PIPE SECTIONS1' JOINING METHOD Flush Threaded with"0" rings to seal joints		
PROTECTION SYSTEM RISER PROTECTIVE PIPE LEN PROTECTIVE PIPE O.D.	3 3/4'	Concrete pad 2	ION Locking R 'X2'X6" meets A	STM C150
ITEM	GROUND SU	RFACE (Ft)	ELE	YATION SLT
TOP OF RISER PIPE		30	3.8	6
GROUND SURFACE	0.	.0	3.5	6
BOTTOM OF PROTECTIVE PIPE		.16	0.40)
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150 BENTONITE 3/8" Pellets SAND 20/30 Silica, ASTM C775 GRAVEL N/A	TOP 0.0 TOP 0.5 TOP 1.0 TOP N/A	BOTTOM 0.5 BOTTOM 1.0 BOTTOM 12.0 BOTTOM N/A	TOP 3.56 TOP 3.06 TOP 2.56	BOTTOM 3.06 BOTTOM 2.56 BOTTOM -8.44 BOTTOM N/A
PERFORATED SECTION	TOP 1.0	BOTTOM 11.0	TOP 2.56	BOTTOM -7.44
PIEZOMETER TIP			1	
BOTTOM OF BOREHOLE	12.0		-8.4	14
GWL AFTER INSTALLATION	2.3		1.2	2
3 THE PIEZOMETER FLUSHED A AS A SENSITIVITY TEST PERFORMANCE MARKSWells_developed_	MED ON THE PIEZ	OMETER?		X

Installed by: K. Dorsey

Date: 6/4/90

Key West Remedial Investigation

Checked by:

M. Hampton

Date:

9/21/90



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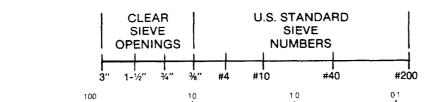
PROJECT NUMBER:	PROJECT NAME: \			*:			
BORING NUMBER:	COORDINATES:		DATE: (DATE: CMA			
ELEVATION:	GWL: Depth Date/Tim	e (10 a	DATE START	ED:			
ENGINEER/GEOLOGIST:	Depth Date/Tim		DATE COMPI				
DRILLING METHODS:	9.36	C	PAGE	OF			
SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (5) RECOVERY ()	DESCRIPTION	USCS SYMBOL MEASURED CONSISTENCY (TSF)	CONSTRUCTION	REMARKS			
30 H D T D T O T O T O T O T O T O T O T O T	Size	NA W					
NOTES: Drilling Contractor Drilling Equipment Driller:	10/c ad	Raylanda dan dan dan	3 73				

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.



GRAIN SIZE IN MM

0.01	0 001	- 0.000
	<u> </u>	

	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SIET AND GEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS. SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS. SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedia	al Investigation	FIELD ENG./GEO.	K. Dorsey	DATE 6/11/90	
PROJECT NO. 595392		CHECKED BY M.	Hampton	DATE 6/4/90	
BORING NO. MW10-2		DATE OF INSTALL	ATION6	/4/90	
BOREHOLE DRILLING					
DRILLING METHOD Hollow	stem auger	TYPE OF BIT	Rock bit		
DRILLING FLUID (S) USED:	N/A	CASING SIZE (S)			
FLUIDFROM	то	SIZE	FROM	то	
FLUIDFROM		SIZE	FROM	то	
DESCRIPTION					
TYPE Sch. 40 PVC ASTM F	480 and D170	RISER PIPE MATI	FRIAL Sch 40 PV	C ASTM F480	
DIAMETER OF PERFORATED SE		RISER PIPE DIAM	ETERS:	and D170	
PERFORATION TYPE:			<u>N/A</u> 1. D		
SLOTS HOLES	SCREEN X	LENGTH OF PIPE			
AVERAGE SIZE OF PERFORATION		JOINING METHOD			
TOTAL PERFORATED AREA		rings to seal joints.			
PROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D.			ION <u>Locking ris</u> d 2'X2'X6" meet		
and the state of t	DISTANCE AE	BOVE/BELOW	FIF	VATION	
ITEM		RFACE (Ft)	(MSD	
TOP OF RISER PIPE	0	·	 	.36	
GROUND SURFACE		0.0	3.03		
BOTTOM OF PROTECTIVE PIPE	0	.16	2	.86	
BOREHOLE FILL MATERIALS:					
GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 0.5	TOP 3.03	BOTTOM 2.53	
BENTONITE 3/8" Pellets	TOP 0.5	BOTTOM 1.0	TOP 2.53	BOTTOM 2.03	
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 12.0	TOP 2.03	BOTTOM -7.97	
GRAVEL N/A	TOP N/A	BOTTOM N/A		BOTTOM -7.97	
PERFORATED SECTION	TOP 1.0	BOTTOM 11.0	TOP 2.03	BOTTOM -7.97	
PIEZOMETER TIP BOTTOM OF BOREHOLE	12.0	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		9.09	
GWL AFTER INSTALLATION				0.7	
WAS THE PIEZOMETER FLUSHED A WAS A SENSITIVITY TEST PERFOR REMARKS Wells were developed 20 gallons were pumped. Pu a flow rate of 1 to 2 pgm.	FTER INSTALLATMED ON THE PIE	FION? ZOMETER? g clear, silt/san	YES NC d free water.	X X Approximately gal pump with	

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KONE	CT NUN	AREH:		23 m	PROJECT NAME:					1 1 1 1
ORIN	G NUMI	BER:			COORDINATES:			DA	TE:	-04 -0*
EVA	TION:	7	<u>-</u>			e/Time	i di	DA	TE STARTED:	
ENGINEER/GEOLOGIST: Depth Date/Time									TE COMPLETE	
RILLI	NG MET	HODS:	7.1				٠.	PA	GE	OF
(4)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REN	MARKS
- - - - - -		p-74 an () 11	A	or Clade		40	1 · 5 · 6 · 6 · 6 · 6 · 6 · 6 · 6 · 6 · 6		10:03	
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illing	Contra	nent	- 	1		0/2 1 0/2 1	3.0	Cars		• · · · · · · · · · · · · · · · · · · ·

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

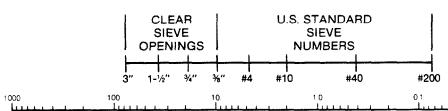
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(1)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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GRAIN SIZE IN MM

CORRUSE	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILI AND CENT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



MONITOR WELL INSTALLATION SHEET

PROJECT NAME Key West Remedia					
PRCJECT NC. 595392		CHECKED BY M	<u>Hampton</u>		DATE 6/4/90
BORING NO. MW10-3	· ·	DATE OF INSTALL	ATION	6/4/	′90
BOREHOLE DRILLING					
DRILLING METHOD Hollow	stem auger	TYPE OF BIT	Rock bit		
DRILLING FLUID (S) USED:	N/A	CASING SIZE.(S)	USED:	N/A	
FLUID FROM	то	SIZE	FROM		то .
FLUIDFROM		SIZE			
DESCRIPTION				•	
TYPE Sch. 40 PVC ASTM F	480 and D170	RISER PIPE MATE	ERIAL Sch	AO PVC	ASTM EARO
DIAMETER OF PERFORATED SE		RISER PIPE DIAM	ETERS:	-TO 1 VC	and D170
PERFORATION TYPE:		4	/A		4
SLOTS HOLES	SCREEN X	LENGTH OF PIPE			
AVERAGE SIZE OF PERFORATION	_				
TOTAL PERFORATED AREA		<u>rings to sea</u>			
PROTECTION SYSTEM RISER PROTECTIVE PIPE LENG PROTECTIVE PIPE O.D.		OTHER PROTECT Concrete pad			
ITEM	DISTANCE AS GROUND SU	OVE/BELOW RFACE (Ft.)		ELEVAT	TION L)
TOP OF RISER PIPE	0.	3.63			
GROUND SURFACE	0	.0	3.30		
BOTTOM OF PROTECTIVE PIPE	0	.16		3.1	3
BOREHOLE FILL MATERIALS: GROUT Type I Cement ASTM C150	TOP 0.0	BOTTOM 0.5	TOP 3	.30	BOTTOM 2.80
BENTONITE 3/8" Pellets	TOP 0.5	BOTTOM 1.0	TOP 2	.80	BOTTOM 2.30
SAND 20/30 Silica, ASTM C775	TOP 1.0	BOTTOM 12.0	TOP 2	.30	BOTTOM -8.70
GRAVEL N/A	TOP N/A	BOTTOM N/A	TOP N	/A [BOTTOM N/A
PERFORATED SECTION	TOP 1.0	BOTTOM 11.0	TOP 2	.30	воттом -7.70
PIEZOMETER TIP					
BOTTOM OF BOREHOLE	1:	2.0	.0 8.70		
GWL AFTER INSTALLATION		2.3	<u>L</u>	1.0	
WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? VAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? Well developed 6/6/90, produced clear silt/sand free water after pumping approximately 25 gallons Pump used was a 5 HP Briggs and Stratton Centrifugal pump with a flow rate of 1 to 2 gpm.					



PROJECT NUMBER: 595 392	PROJECT NAME: Kea west k	Compression of the	1600 - 15000 - 15016	
BORING NUMBER: B-/	COORDINATES: N/X	<u> </u>	DATE: 6/2/20	
ELEVATION: 3,4	GWL: Depth 2, 3 Date/Tim	DATE STARTED: A COLUMN		
ENGINEER/GEOLOGIST: K, Dorseu		ne /v , ½	DATE COMPLETED 615 175	
DRILLING METHODS STATE OF THE		1 Barago	PAGE / OF /	
DEPTH (\$\frac{1}{4}\) SAMPLE TYPE & NO. BLOWS ON SAMPLER PER (\$\langle '' \) RECOVERY ()	DESCRIPTION	TIT	NET CONSTRUCTION REMARKS A CONSTRUCTION	
2-2 14 Dry Tor 17 17 40 Doll + 12 D	Limestone Limestone Limestone		3. Open 3. Open OVA 1. Open Con Con Con Con Con Con Con Con Con Co	
NOTES: Drilling Contractor Drilling Solutions Drilling Equipment Fond F-700 min. Driller: Kevin Thick	tion <u>Live Dri</u> ll			

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	<u>5 -</u> 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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GRAIN SIZE IN MM

0000150	GRAV	'EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SIET AND SEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS. MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT. HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



DRO IE	CT NUM	IBER: 5	252	<i>a</i> a	PROJECT NAME: Kell 1-30 1000000 100000000000000000								
		BER: 건		724	COORDINATES: N/2					DATE: 6/2/20			
ELEVAT						GWL: Depth 2,6 Date/Time 62,92-12:43					DATE STARTED: 6 . 5 . 73		
			T: K	Dorsey	Depth N/A	Date/Time				TE COMPLETED			
				CONTRACTOR PROPERTY		/5011	Bo	11119	PA	GE	OF		
DЕРТН (∮́7.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (b'')	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REM.	ARKS Chymnic Chymnic		
		3255 4733	<i>₩</i> #:	Dry, -or	Limestone			. ·		12:40	0074		
	BEETA-À	124 15 2 12 1 14		1 ² , , , .	- insestone 					12:50	18.0 ppm = 100 p		
		14 10 1년		Wet, to	in Comme				1		1.0 p 3.11.		
Drilling Drilling Driller	g Contra	ctor D	rill or t	ing Solon F-700 Miss lex	117. 15. <u>1</u> 111								

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

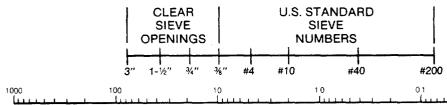
DENSITY OF GRANULAR SOILS

	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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GRAIN SIZE IN MM

	GRAV	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

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	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



BORIN ELEVA ENGIN	IG NUMI TION: IEER/GE	OLOGIS	3 T: ∠',	Dorsey	PROJECT NAME: KCC COORDINATES: N/A GWL: Depth 3, 5'	Date/Time	6/2,	/90-10140	DA ⁻	DATE STARTED: DATE COMPLETED:			
DRILL	NG MET	HODS:	<u>ري+را</u>	manny ton	5777 - 37 TACH	_So; / ,	<u> Sor</u>	i 1) <u>a</u>	PA	GE /	OF /		
DEPTH	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ((o '1)	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	7.17.e	MARKS Cradinali Dollar		
		2 2 6 7	NA	Dollitic Dry, tin	Limecione		12/2	7			hoppa.		
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- %- VS		18.	Ÿ	Octifie Wet,	Linestone N		V	¥	• •		200 - 200 - -		
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NOT(Drillin Drillin	g Contra	nent = S	oril and Al-	ling Sala F-700 Mink	ition pile del·		.			1	•		

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

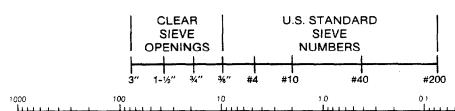
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(1)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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GRAIN SIZE IN MM

COBBLES	GRA\	/EL	SAND			SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	JET AND OEAT

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SÄNDS, SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

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	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJE	ECT NUM	IBER: 「^	953	42	PROJECT NAME:	1 to 1 1 2 20 m		1. 1. 1.	٠, -:	. , .			
	IG NUME				COORDINATES:		· ·			DATE: 1, 20 / 1			
ELEVA	TION:	215/			GWL: Depth 3 Date/Time ///30					DATE STARTED:			
			T: -<,		Depth 🧠	Date/Time				TE COMPLETE			
				1751	17.35		•		PA	3E /	OF		
оертн $(+^{\uparrow})$	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REN	MARKS		
\$ -2	BEFFER P	777 00 7 69 4 47 10 1 1 8 2 7 1 1 3 6 8 2 7 1 1 3 6 8 2 7 1 1 3 6 8 2 7 1 1 3 6 8 2 7 1 1 3 6 8 2 7 1 1 1 3 6 8 2 7 1 1 1 3 6 8 2 7 1 1 1 3 6 8 2 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					8/2			11:30			
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CONSISTENCY OF COHESIVE SOILS

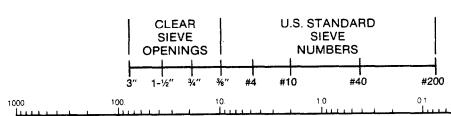
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE(1)
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

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GRAIN SIZE IN MM

	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	562. ANS 5241

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

00/02							
CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES					
GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES					
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS. LITTLE OR NO FINES					
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES					
SANDS WITH FINES	SM	SILTY SANDS. SAND-SILT MIXTURES					
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS, SAND—CLAY MIXTURES					

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PRO IF	CT NUM	1BER:	·,	5 17	PROJECT NAME: <				- ,	A	+ 25%	
		BER:		· · · · · · · · · · · · · · · · · · ·	COORDINATES: N.			<u> </u>	DA	TE:		
	TION:		· ·		GWL: Depth	Date/Time	1./2/2	20-10:41	DA	TE STARTE	D: 12-7 (1) (4-4)	
		OLOGIS	T: •		Depth V/A Date/Time					DATE COMPLETED:		
				ndara Per	18 70741011 15	est/(5:	<u>.</u>		PA	GE ,	OF /	
DЕРТН (¬¬¬,)		BLOWS ON SAMPLER PER	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	Time	REMARKS Option is NOTICE (2014)	
 	N/A			Oolitic Dry, tan	Limestor	:0	Nj#	غرية		10;41	3.0ppm - 074 -	
5-4					Limesto	ne					2014	
				Octivity :	imectone						5ີຊີຊິຊິຊິຊິດ _ - -	
 	\			Dorwell Betyddia		e Const					າຍັຊລະຄ <u> </u>	
2-/0	BERAT EP TOX		V	Colific West, 10	Limesto	one		· • •	×	11:00	`မမ္းႏွ - - -	
				END OF	F BORING	,					- - - - - -	
NOTE Drillin Driller	g Contra	ctor D	ril crd	Ing Joseph Ford	ion Drill			<u> </u>				

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BABREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

U.S. STANDABD **CLEAR** SIEVE SIEVE NUMBERS **OPENINGS** #10 #40 #200 01 100

GRAIN SIZE IN MM SAND GRAVEL COBBLES COARSE MEDIUM FINE FINE COARSE

SILT AND CLAY

0 001

0 0001

USCS CLASSIFICATION FOR SOILS

COA	RSE-	GRAIN	NED	SOILS
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1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH F!NES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
	sc	CLAYEY SANDS, SAND—CLAY MIXTURES

FINE-GF	RAINED/	HIGHLY	ORG	ANIC	201	LO
/						_

FINE-GRAINED/HIGHLY ONGANIC SOLES							
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY					
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS					
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY					
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS					
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS					
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY. ORGANIC SILTS					
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS					



PROJE	CT NUM	IBER: 5	953	92	PROJECT NAME:	(4) 1,25		1 35	-17,	yosfina.	·
	IG NUME	/	,		COORDINATES:	5.7Å			DA	TE: ن 💥 🖟	J
ELEVA	TION:	5,0			GWL: Depth	Date/Time	6/2/4	40-15/3	O DA	TE STARTED: 🕐	0 2/71
ENGIN	EER/GE	OLOGIS	T: 🔀 ,	Don	Depth N/	Δ Date/Time		. 3		TE COMPLETE	Di 12 (2 (4))
DRILLI	NG MET	HODS:	540	undard fr	netration	Tes+/0	<u> </u>	Sorson	PA	GE <u> </u>	OF′ /
о є РТН (∰,)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REM	IARKS
	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	20 22 18	対	Odlitic Dry, ten	Limettone	3		, , , , , ,			10 0 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	BFFT4-1 BP TIX	18 28 43		Wet, ta						15:30	3 , /~ ·
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· X		13 3 3 0 3 4		Bolitic	Lin.ector	; e.	>			15:50	
	2. M		-t	END	7- BORING	\$,	V			- - -
											- - -
Drillin Drillin Drillei	g Contra g Equipn	ctor Denent Fo	ril! ord Al	ing Solo F-700 Mak	fich one Dr.						

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

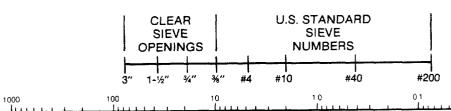
DENSITY OF GRANULAR SOILS

DENSITY	STANDARD PENETRATION RESISTANCE ⁽¹⁾
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	OVER 50

(1) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0 001

0 0001



GRAIN SIZE IN MM

0000150	GRAVEL			SAND		SILT AND CLAY	
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE		

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS. GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS. SAND—CLAY MIXTURES

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY. FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



PROJECT NUMBER: 595392 BORING NUMBER: 8-5					PROJECT NAME: Key West Key dia / Investigation of the COORDINATES: WAY DATE: (a To 12)						
ELEVA		2,11			GWL: Depth 2'4" Date/Time 6/2/90 - 13:45 DATE STARTED: 31.50				70		
		OLOGIS	T: K.	Dorsey		h Date/Time N/A DATE COMPLETED:					
DRILL	ING MET	HODS:	540	NOGET Per	creation Test/Sc. Soring			PA		OF /	
						/	T				
DEPTH (-f-)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ('6")	RECOVERY ()		DESCRIPTION		USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REM	MARKS
 	BEETA-	5 15 19 17 19 17	NJA	Colific Dryston	Limestone		Ny Fr	A grid	· •	13:40	2025 204
Q-4	NIA	7 9 5 5 5		Solltie Wet, Far	Flinestone Fig. 3'4'						314 ppn
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<i>5-8</i>		5 % S & S & S & S & S & S & S & S & S & S		A Comment of the Comm	i ingsinje.						Filegii Tih
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				END 0	ะ อ้อลเพษ						- - - - - - -
NOTE											
Drilling	Contrac	tor D	ri	inc.	7 (01)						
Drilling	, = zuu	ent FA	<u></u>	F-70.1.10	sile Toill						
Driller	Kel	vin -	<u> </u>	ey	4						
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	ONE CONTRACTOR OF THE CONTRACT
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS PER SQUARE FOOT)
VERY SOFT	· LESS THAN 0.25
SOFT	0.25 to 0.50
FIRM	0.50 to 2.0
HARD	2.0 to 4.0
VERY HARD	MORE THAN 4.0

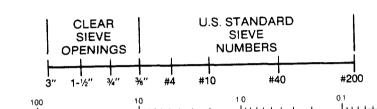
DENSITY OF GRANULAR SOILS

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(*) STANDARD PENETRATION RESISTANCE IS THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2-INCH O.D. SPLIT BARREL SAMPLER 12 INCHES USING A 140-POUND HAMMER FALLING FREELY THROUGH 30 INCHES. THE SAMPLER IS DRIVEN 18 INCHES AND THE NUMBER OF BLOWS RECORDED FOR EACH 6-INCH INTERVAL. THE SUMMATION OF THE FINAL TWO INTERVALS IS THE STANDARD PENETRATION RESISTANCE.

0 001

0 0001



GRAIN SIZE IN MM

_	GRAV	/EL		SAND		SILT AND CLAY
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	

USCS CLASSIFICATION FOR SOILS

COARSE-GRAINED SOILS

1000

CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES				
GRAVELS WITH FINES	GM	SILTY GRAVELS. GRAVEL-SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS GRAVEL-SAND-CLAY MIXTURES				
CLEAN SANDS	sw	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
(LITTLE OR NO FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES				
SANDS WITH FINES	SM	SILTY SANDS. SAND-SILT MIXTURES				
(APPRECIABLE AMOUNT OF FINES)	sc	CLAYEY SANDS. SAND—CLAY MIXTURES				

FINE-GRAINED/HIGHLY ORGANIC SOILS

	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SILTS AND CLAYS LIQUID LIMIT (LESS THAN 50)	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
SILTS AND CLAYS LIQUID LIMIT (GREATER THAN 50)	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
	ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	РТ	PEAT, HUMUS. SWAMP SOILS WITH HIGH ORGANIC CONTENTS